NOVEMBER, 1957

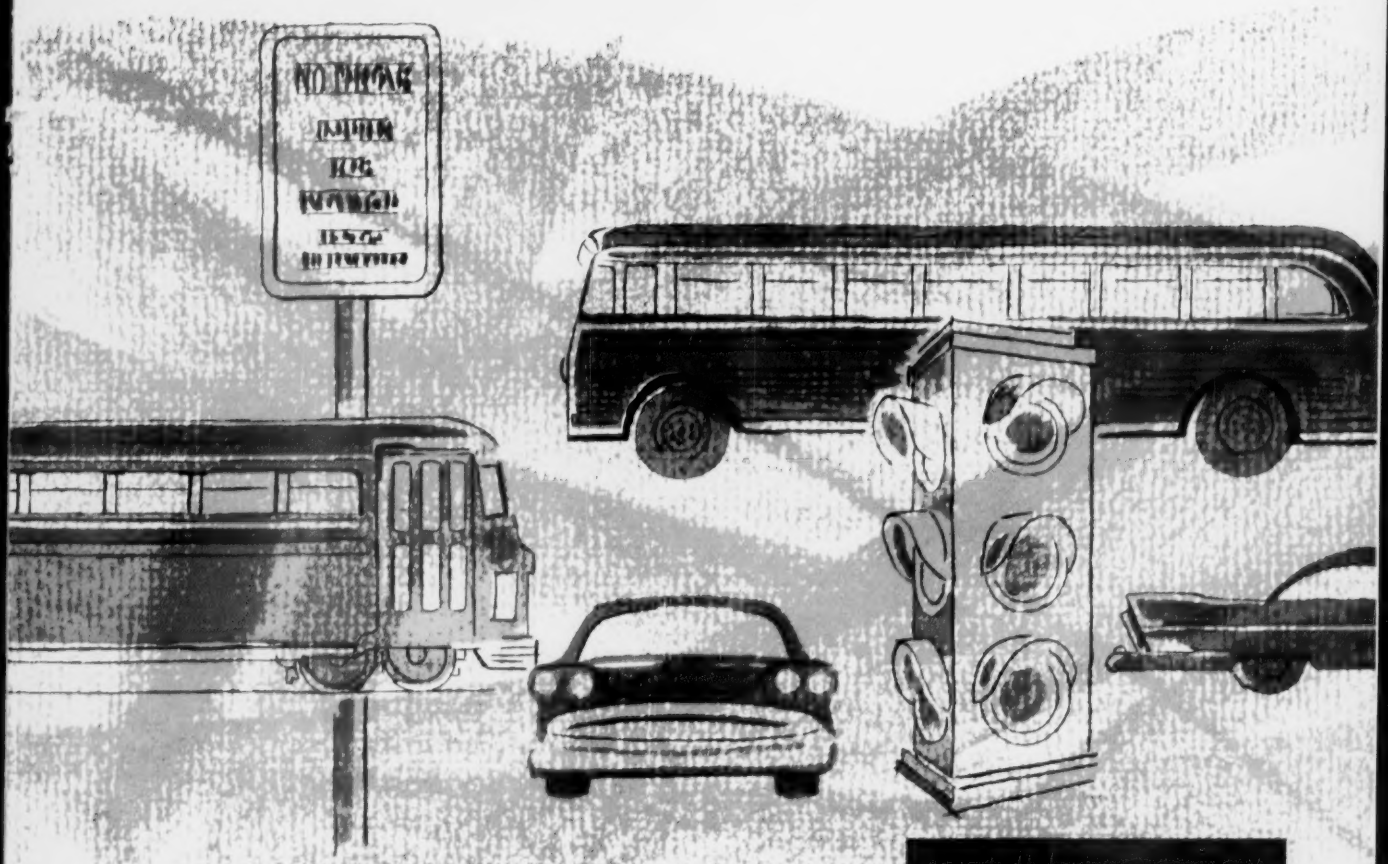
American Engineer

IN THIS ISSUE . . .

- ***Traffic—A Challenge to Professional Engineers***

By

Col. S. H. Bingham, AUS. (Ret.)
Consulting Engineer



An AE Staff Report: An Engineering Library

A Symposium: Professional Development of the Young Engineer in Education

Plus: News of the Fall Meeting . . . National Engineers' Week . . . Latest Comments on Professional Unity . . . Engineer-in-Industry Conference

Col. S. H. Bingham

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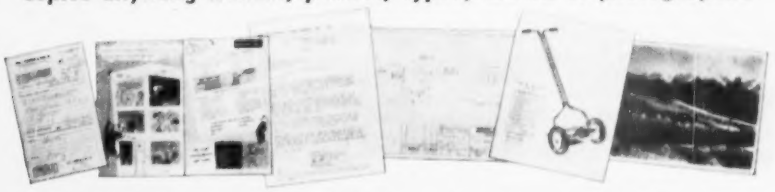

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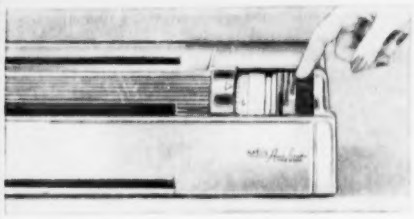

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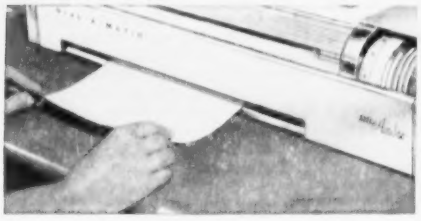

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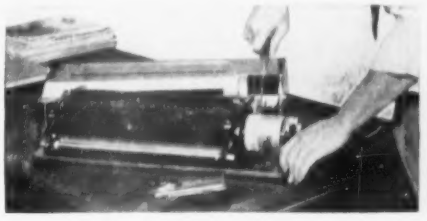

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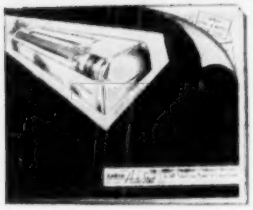

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(Circle 10 on Inside Back Cover)

Letters to the Editor

On Communism . . .

Dear Editor:

Mr. Kurtz's interesting and timely article (September, AE) stating that wars are caused by national military power rather than ideologies fails to recognize two premises of Communism. They are: (1) Communism cannot survive in the world if there is any opposition (capitalism), and (2) Any means of attaining the goal of world Communism is justified.

These well-known communist beliefs are sufficient cause for the fear and anxiety that Mr. Kurtz says are brought on only by national military power. They serve notice to the communist that he must annihilate all opposition if he is to survive, and that he need not use legal means in his efforts. The non-communist is thus warned that the communist is out to get him, will do so at the earliest opportunity, and that the blow may come as an unexpected stab in the back. Such blows may by-pass national military power as in the past.

National military power is perhaps one answer to the fear and anxiety on both sides. In this case it is not the cause. Ideology brought on the fear and anxiety.

EDWARD H. AMOS, P.E.,
Euclid, Ohio

Deep Impression . . .

Dear Editor:

I am wondering what effect the article, "An Engineer Versus War," (September, AE) by Howard G. Kurtz, Jr., has had upon other members of NSPE. It left a deep impression upon me, setting my mind pondering on remedial measures for averting war.

Mr. Kurtz posed a crucial question in whether or not it is possible to create from the U. N. a large-scale world-wide safety organization which can control national military power and prevent war.

The scientific developments of today make it possible for us to destroy ourselves tomorrow from within with outer-space warheads.

Perhaps with full discussion of Mr. Kurtz' ideas, we may draw from the minds of the men behind these missiles the means for lasting peace and progress and add to the engineer's contributions to society.

LESLIE WILLIAMS, P.E.,
Philadelphia, Pa.

Negative . . .

Dear Editor:

Were I in a position of authority, my answer to M. S. Coover's proposal in the July issue of AMERICAN ENGINEER would be absolutely negative. . . .

Many thousands of graduate engineers in recent years have taken time to prepare themselves to become registered engineers, via examination, thus proving their engineering training. They did this so that they could some day realize the dream of being members of a truly strong professional engineering organization consisting of *only* high calibre, technically proven engineers. Yet Mr. Coover wants us to allow him to drop a bomb on our growing status. From his proposal to permit non-registered engineers, i. e. non-professional engineers, to infiltrate into our society of professional engineers (as the name implies) via AIEE, etc., we stand to lose *everything*. . . .

EDWARD A. GALUSKA, P. E.,
Newark, Ohio

Engineer "Surplus" . . .

Dear Editor:

I was pleased to see the review of the Blank-Stigler Report (refuting "shortage") in the August issue, but surprised to read in the September issue that Deutsch & Shea have endeavored to refute the law of supply and demand on the basis of high starting salaries. I hope that you publish a review of their work so that the members can see a typical management type argument. For months there have been "shortage" references and articles in the AMERICAN ENGINEER, lets have a series of articles about the *surplus*. Articles might be based on the following thoughts.

1. There are *very* few jobs open that offer even *average* pay.

2. There are many engineers doing subprofessional work.

3. Many engineers go into sales and other fields to earn a better living.

In the face of the above it has been a mystery to me how anyone could prove a "shortage."

If we want to be the representative "unity" organization lets get solidly behind the truth that the "shortage" is of low pay help and the shortage talk is by those who would profit by large enrollment and the continuation of the low pay. Or else lets quit claiming to represent the engineers and admit to being a management organization.

JOHN M. GRAHAM, P.E.,
Bellwood, Illinois

Fresh Thinking . . .

Dear Editor:

I request that in the very next issue you print an unbiased summary of Blank and Stigler's *The Demand and Supply of Scientific Personnel*. The vast majority of NSPE members will find it very interesting and confirm what they knew for several years.

It is very important that you, as an editor, publish articles of vital interest to the majority of NSPE members. Do you ever read the letters to the publisher? Do you have the insight what the vexing problems are? If you do, you can make our publication less dull, more vital and stimulating.

As one letter stated ". . . let's have some fresh thinking so we can get out of these self-imposed doldrums."

ELLIOT CARNAY, P.E.,
New York, N. Y.

Recognition . . .

Dear Editor:

Until engineers educate themselves beyond the level of technicians, theologians and politicians (and are willing to take all the risks that such knowledge implies), there is little hope of more than token professional recognition in our day or later. That or similar distinction will be reserved by humanity for the more enlightened: individual biologists, anthropologists, astronomers, philosophers, nuclear physicists, etc.

Professionalism, (or what is thereby implied) is the antithesis of specialization.

E. N. IBERG, P.E.,
Drums, Pa.

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(Circle 2 on Inside Back Cover)

American Engineer

NOVEMBER

1957

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The pressure of public opinion is like the pressure of the atmosphere; you can't see it—but all the same, it is sixteen pounds to the square inch.

—James Russell Lowell

•

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PROFESSIONAL NEWS IN CAPSULE FORM

A Roundup of Late Events for Professional Engineers

British House Survey Shows Five Engineers

The British House of Commons has ninety-three lawyers among its members but only five engineers, the Institution of Electrical Engineers in London was recently told.

J. Vaughan Harris of the Institution said a survey made of the occupations of the present House reveals that less than one per cent were engineers.

The survey also showed the House contained 34 businessmen, 50 members of the armed forces, 16 journalists, 36 farmers, and 27 teachers.

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(Circle 3 on Inside Back Cover)

Pratt Institute Greets 58 Training Students

Official greetings to Pratt Institute was recently accorded fifty-eight engineering students registered in the 5-year college training program jointly sponsored by the United States Naval Shipyard and Pratt Institute. The fifty-eight (including one girl) have spent the summer in Navy Yard workshops and have recently started classes at the Institute.

Pratt officials report that first test marks confirm that these students, selected on competitive basis from high-school graduates in the entire metropolitan area, are of the highest academic caliber. Representing Pratt Institute at the greeting will be Warren E. Wilson, dean of the School of Engineering; representing the Navy, Commander Lucas B. Mayer, industrial relations officer; Dr. Theodore Zaner, industrial relations assistant; and Edward Mallon, of the industrial management office.

Students accepted under this program attend full-time classes the first and fifth years, with tuition paid by the Shipyard, and during the second, third, and fourth years, attend classes half-time at their own expense, being employed the other half-time, with pay, by the Shipyard. On graduation, students must continue service as a full-time Navy employee, one year of service for each year for which assistance was provided.

"Yes, I would like to say a few words to the president of the Biglow engineering firm. Mr. Biglow—I quit."

D. A. Quarles Presented AICE Award of Merit

Donald A. Quarles, Deputy Secretary of Defense, was selected as the 1957 recipient of the American Institute of Consulting Engineers Award of Merit.

The award, citing Mr. Quarles as an "able administrator and noted scientist," was presented by Edward H. Anson, president of the Institute, at the annual dinner, Oct. 15.

Mr. Quarles is the sixth outstanding American to receive the Institute's Award of Merit. Other recipients have been Clarence D. Howe, 1952; Vannevar Bush, 1953; former President Herbert Hoover, 1954; Benjamin F. Fairless, 1955, and Ralph Budd, 1956.

❁

Eastman Kodak Gives $100,000 to Colleges

Eastman Kodak Company announced recently the awarding of fifty-eight direct grants and thirty-nine fellowships, having a combined value of over $100,000, to colleges and universities in the United States.

The company also announced a contribution of $175,000 in special grants to colleges and universities in areas where Kodak has special manufacturing interests, and an award of $32,000 to associated college groups and other organizations established for educational purposes.

These various awards are part of the continuing Kodak program of financial aid to higher education.

The direct grants, valued at $230,000, will go to fifty-eight privately supported colleges and universities on the basis of graduates of those institutions who joined the company five years ago and are presently employed.

Twenty fellowships will be awarded to persons studying for the Ph.D degree in chemistry, six for Ph.D degree study in physics, and thirteen for engineering students working for the master of science degree. These fellowships, for the 1958-59 academic year, are valued at $120,000.

Atomic Industry's 1958 Trade Show March 17-21

The atomic industry will stage its major 1958 trade show next March 17-21 at the International Amphitheatre in Chicago, Ill.

The show will feature current developments in the industrialization of the atom.

The event will be held in conjunction with the 1958 Nuclear Congress, an international meeting sponsored by more than thirty organizations representing some 300,000 scientists, engineers and top management executives.

Over 200 scientific papers on new developments in nuclear energy and its industrial applications will be presented at the Nuclear Congress. The Congress will be held in the same building simultaneously with the fair.

On display will be a large cross-section of the products and services available from more than 2,500 United States firms presently engaged in the atomic energy field.

❁

ASA Approves Drafting Practices in Major Step

A major step toward uniform drafting practices throughout American industry and the engineering professions has been accomplished with the approval by the American Standards Association of four sections of the American Drafting Standards Manual Y14 and their publication by The American Society of Mechanical Engineers.

This announcement was made jointly by Col. Clarence E. Davies, secretary, The American Society of Mechanical Engineers, and Vice Admiral George F. Hussey, Jr., USN (ret.), managing director, American Standards Association.

"These new American Standards and those that follow will represent a common written language for engineers in all trades and professions," Col. Davies stated. "By using these new standards, engineers in industry and government can avoid costly misunderstandings, errors and delays in interpreting engineering drawings. Their use will add in great measure to the well-being and security of our way of life."

The first four sections of the American Drafting Standards Manual Y14 approved as American Standards are: Section 1, Size and Format; Section 2, Line Conventions, Sectioning and Lettering; Section 4, Pictorial Drawings; and Section 5, Dimensioning and Notes.

Arc Welding Foundation Gives Engineering Awards

Engineering undergraduates in twenty-six engineering schools and universities received recognition and awards this year in the annual competition sponsored by The James F. Lincoln Arc Welding Foundation of Cleveland for student designs of welded machines and structures.

A total of forty-six awards amounting to $5,000 were given to engineering undergraduates. Duplicate awards in scholarship funds were presented to schools honoring the students whose designs received the main awards. Awards were made for papers submitted to The Lincoln Foundation presenting designs of machines and structures improved through the use of welded design.

The First Grand Award of $1,250 went to a husband and wife engineering team, Charles and Ann Hutchins who as undergraduates at the University of Michigan, collaborated to submit an entry on the design of various parts used in a welded two-stage press. Ann was enrolled in the College of Architecture and Design; Charles was in the Mechanical Engineering Department. Their departments were each given $500 in scholarship funds honoring their achievement. In the ten-year history of the Lincoln Foundation competition, this is the first year a woman has received recognition among the generally predominate male engineering undergraduates.

The Lincoln Foundation is sponsoring a similar competition for the current school year to again interest undergraduate engineers in studying how welded design can reduce costs and improve both machines and structures of all types. Any resident undergraduate can participate.

NOVEMBER MEETINGS Of Note

National Metal Congress and Exposition—Annual Meetings of American Institute of Mining, Metallurgical and Petroleum Engineers, American Society for Metals, and Society for Nondestructive Testing—November 4-8, International Amphitheatre, Chicago, Illinois.

American Standards Association—Annual Meeting and National Conference on Standards, November 13-15, St. Francis Hotel, San Francisco, California.

Society of Naval Architects and Marine Engineers—Annual Meeting, November 13-16, Waldorf-Astoria Hotel, New York, New York.

American Society of Refrigerating Engineers—Semi-Annual Meeting, November 14-16, Hotel Shoreland, Chicago, Illinois.

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(Circle 1 on Inside Back Cover)

E. R. Queer Nominated For President of ASHAE

Elmer R. Queer, director and professor of engineering research, The Pennsylvania State University, University Park, Pa., has been nominated for the presidency of the American Society of Heating and Air-Conditioning Engineers it has been announced by the society president, Peter B. Gordon, New York, N. Y.

The report of the Nominating Committee also includes for first vice president, Arthur J. Hess, president of Hess-Greiner and Polland, Los Angeles, Calif.; for second vice president, Walter A. Grant, vice president, Carrier Corporation, Syracuse, N. Y.; and for treasurer, John H. Fox, vice president-sales, Honeywell Controls, Ltd., Toronto, Ont., Canada.

According to President Gordon, the members will vote by mail upon receiving proxy ballots and official notice of the 64th annual meeting which will be held at Pittsburgh, Pa., January 27-29, 1958. The installation of the elected officers and members of council will take place during the annual meeting.

C. Y. Thomas Participates In Trip to Study Turkey

Among those accompanying Louis Rothschild, Under Secretary of Commerce, in his recent trip through the small towns of Turkey trying to reconstruct the Turkish economy was C. Y. Thomas, a past vice president of the National Society.

Mr. Thomas, of the Spencer Chemical Co., accompanied the Under Secretary along with other American businessmen in an effort to aid the Turkish people.

Plant Maintenance and Engineering Show Set

The 1958 Plant Maintenance and Engineering Show, which returns to Chicago for the first time in three years next January, will be the largest in its history, according to Clapp and Poliak, Inc., New York, the exposition management.

The show is scheduled for the International Amphitheatre, January 27 to 30, inclusive, with the annual Plant Maintenance and Engineering Conference set for the same week.

Exhibit space already assigned indicates that the show will be about fifty per cent larger than the last time it was staged in Chicago. About 425 companies are expected to exhibit.

The fact that more companies are exhibiting and that virtually all of them have requested bigger booths to demonstrate a greater variety of maintenance products accounts for the tremendous growth of the show.

Advance registration cards and hotel information for executives who plan to attend may be obtained from Clapp and Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

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(Circle 5 on Inside Back Cover)

Hoover Medal for 1957 Awarded Scott Turner

In recognition of many years of outstanding public service in various capacities, Scott Turner, of New York, former director of the United States Bureau of Mines, has been chosen by the representatives of four major national engineering organizations to receive their jointly-sponsored Hoover Medal for 1957.

Named after former President Herbert Hoover, who was its first recipient, in 1930, this gold medal is awarded "by engineers, to a fellow-engineer, for distinguished public service." It is one of the most distinguished honors bestowed by the engineering profession. The sponsors are the American Society of Civil Engineers, the American Institute of Mining, Metallurgical, and Petroleum Engineers, The American Society of Mechanical Engineers, and the American Institute of Electrical Engineers.

Presentation will be in New York next February, at the annual meeting of the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME), of which Mr. Hoover was president in 1920, and is now senior past president, and which Mr. Turner also headed as president, and is now the past president next to Mr. Hoover in seniority.

College Juniors Eligible For Government Exam

To further improve its position in the competition for talented college people, the Federal Government is opening its Federal-Service Entrance Examination this year to college juniors in addition to seniors, college graduates and others of equivalent experience, the Civil Service Commission has announced.

Also, job appointments, effective after graduation, may be offered the juniors if they pass the examination and their names become available on the lists of eligibles to be established. As in the past, such job offers may also be made to seniors.

Two Women Engineers Point to Growing Trend

It wasn't long ago when a girl aspired mightily to be but a phone operator. So, more than a few eyebrows went up recently when two women engineers invaded the male majority of Clemson College for Bell School courses.

Without social fanfare, Mrs. Bess M. Kirkland, Birmingham, Ala., and Miss Wanda Carter, Nashville, Tenn., both with Southern Bell, waded into the rigorous nine-hour daily schedules that characterize a unique "back-to-college" communications school.

An estimated semester's work in electrical engineering is jammed into a three-week program, with emphasis on communications. Both graduated in October with the seventh class of the first term which began in March.

The technical "pioneers" of their sex, arriving in the engineering field by different routes, became bonafide engineers in July. They are Southern Bell's first.

The lady engineers point to a growing trend toward engineering aids—employees beyond the clerical level. There is a preference being shown, they report, for women in these intermediate positions.

"A math or science major is usually required," says Miss Carter, "but not necessarily a full engineering curriculum." She cited two or three women graduates each year from Vanderbilt's engineering school.

Both warn that the "engineering aid" positions now being filled by math graduates will demand more future training. They foresee a degree in engineering for women "necessary" within fifteen years.

NSPE Member Develops New Math Technique

A Philadelphia engineer has developed a new mathematical technique which makes application of electrical laws practical for the first time to mechanical problems in piping systems.

The electrical analogy method is used to analyze stresses in high-pressure, high-temperature piping for power plants, refineries, and chemical plants even before it is installed. The new technique was devised by John W. Soule, an NSPE member, and a mechanical design engineer with United Engineers and Constructors Inc., Philadelphia, Pa.

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(Circle 6 on Inside Back Cover)

Tau Beta Pi Holds National Convention: Robbins Presides at Business Sessions

Tau Beta Pi's 52nd national convention was held at the University of Wisconsin in Madison and at Marquette University in Milwaukee, October 9-12.

The Wisconsin Alpha Chapter at the University of Wisconsin and the Wisconsin Beta Chapter at Marquette University were official hosts, and all but one of the Association's ninety-nine collegiate chapters were represented at the session. The convention was also attended by Tau Beta Pi's national officers headed by President Harold M. King, retired General Electric Company turbine engineer, of Swampscott, Massachusetts.

Plans for the national meeting were made under the direction of Steven A. Woll, president, and Donald E. Tormey, arrangements chairman, of the University of Wisconsin host chapter, and John C. Donovan, president, and Joseph G. Skach, arrangements chairman, of the host chapter at Marquette University. Paul H. Robbins, NSPE executive director and Tau Beta Pi's director of fellowships, served as chairman of the convention business meetings.

❁

Tempco Aircraft Corporation Engineers Teach Part-time at Texas High Schools

An unusual experiment, one of the first of its kind in the nation, is giving students in four Dallas-area high schools a better chance to become tomorrow's scientists.

Their physics teachers are practicing engineers. After teaching one class each day, the engineers go back to their work at Temco Aircraft Corporation.

Last spring, Temco officials held "career nights" for local youths who wanted to know more about aircraft manufacture and other technical work. Engineers who served as counselors at the sessions discovered (1) that the youths were eager for more knowledge, and (2) that many of them were not getting basic instruction needed for college engineering training or further technical education.

Cognizant of the nation-wide engineer manpower situation, Temco officials decided that the solution might lie at the high school level. They discovered that Texas high schools at Duncanville, Cedar Hill, DeSoto and Seagoville didn't offer physics courses because qualified teachers were not available.

Temco decided to provide part-time instructors for the four schools, so that teenagers with talent and desire could go on to college and technical careers. Of the many who volunteered, four of the best-qualified engineers were selected. They commute to the schools each day, teach a class, then return to their jobs. They represent a total of 103 credit hours of physics at the college level, plus many years of practical experience in aircraft engineering fields.

❁

Dr. David B. Steinman Named Division Chairman Muscular Dystrophy Assoc.

Dr. David B. Steinman of New York City, internationally famous bridgebuilder, has been named chairman of the Engineers and Scientists Division of Muscular Dystrophy Associations of America, Inc., it has been announced by William Mazer, MDAA president.

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(Circle 7 on Inside Back Cover)

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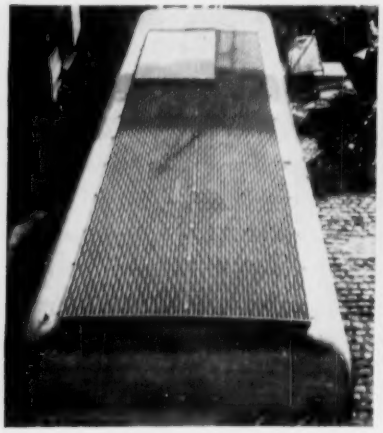

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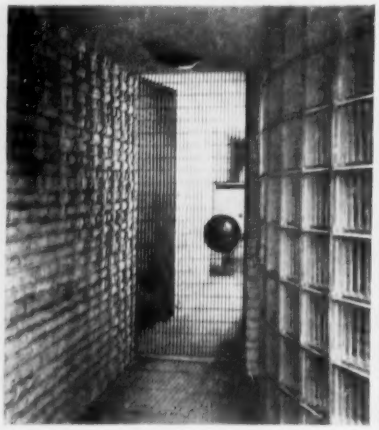

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American Engineer

The Magazine of the Registered Professional Engineer

VOLUME TWENTY-SEVEN NUMBER 11

Traffic — A Challenge to Professional Engineers

By

Col. S. H. Bingham, (U.S.A., Ret.)

Consulting Engineer

TODAY our cities, both large and small, with their environs, are finding it increasingly difficult to cope with the mounting stream of traffic in varied categories which is challenging in its implications. If remedies are not soon found, the complex structure of the city and the related suburban areas as we now know them, will be profoundly affected and probably altered. There are those who would look upon this with favor, but upon reflective thought the social and economic factors which historically have maintained the city concept are deep-rooted and cannot be radically changed without resulting adjustments of a drastic and almost unpredictable nature. But whatever the format of planning may be, a prerequisite is that in scope and in execution it shall in all respects be governed by sound engineering principles. It follows, therefore, that engineers will play a prominent part in what is ultimately done to provide for the over-all interests of public convenience and welfare.

Tredgold, when asked to define engineering, called it "The art of directing the great sources of power in nature for the use and convenience of man." The definition is appropri-

The arm, rising ten stories, singles out one of the bronze panels for which the new Seagram building at 375 Park Avenue, New York City, has achieved world-wide distinction. In this article the author points out that unless mounting traffic problems are solved soon, the "complex structure" of the city will be profoundly affected.

The "mountain" near the heart of Seattle that twenty-five years ago was carried away by belt conveyors and emptied into Puget Sound. This photo, from the corner of Fifth Avenue and Battery, looking south, was made in 1930, while the project was under way. Note ample traffic and parking area at the time in this large city.

ate and befitting the dignity of the profession. The truths contained therein motivate the thinking and activities of the engineer, dedicated as he is to his profession.

In approaching a subject having the complex features of traffic movement, any planning must recognize not only the human factors, but also the political implications involved. This raises an interesting question. Is the professional engineer fully exerting his influence in public affairs? Is he as active within the scope of his professional horizons where public interests are concerned, as his specialized talents entitle him to be? Specifically, is the professional engineer as active as he can and should be in making his influence constructively felt in the traffic situation confronting our cities and towns and which is rapidly becoming a serious national problem?

No one will argue the point that all media of transportation are in the forefront of those agencies developed by engineering effort for "the use and convenience of man." Because they are the result of applied engineering and because their future improvement and development will likewise be the fruits of engineering vision and planning, the subject in its entirety is within the professional engineer's domain of action.

However, many factors are involved in the present unsatisfactory traffic, transit, and commuter situation which complicate it—some are regional, some local—practically all have political and financial aspects, but all have an influence on public welfare.

How, then, can the conscientious professional engineer within the average size city help to alleviate the traffic problem in his community? Along what lines can his best contribution be made? An examination of any given situation shows that there are certain basic factors which are almost universally present; the political situation, matters of finance, zoning ordinances and restrictions, rivalry as to plans, methods and systems, lack of vigorous, competent and public spirited leadership.

By nature and training the engineer is absorbed in the interests and activities of his profession, and generally speaking, finds little of appeal in political proceedings. It would seem apparent, therefore, that he must overcome this reluctance and gain a good knowledge of the political climate in his community, as it affects the matter of traffic and mass transportation betterment and regulation. A knowledge of the political factors, however, is not enough. It must be backed up by constructive action on his part.

ALL of our cities and towns hold public hearings on important civic matters. These meetings, as a rule, are presided over by the mayor with the various elected officials also attending. It is the citizen's right to be heard at these meetings. Here he can either voice protest, commend, or suggest an alternate course of action to that under consideration.

Certainly the professional engineer is a citizen with an eminent right to be heard in any dispassionate and constructive statement he may wish to make in the public interest. These opportunities to exert his influence in matters of civic concern, such as traffic and mass transportation, should not be overlooked or neglected. In participating in his community's activities, the engineer advances in professional stature and in civic importance.

In the performance of this civic duty the engineer will encounter many conflicting views and opinions—some factual, some fallacious, some based upon expediency.

Because those whose lives are devoted to engineering

About the Author . . .

Col. Bingham

Colonel S. H. Bingham recently retired as executive director and general manager of the New York City Transit Authority to enter private consulting engineering practice. He began his career in the transit industry in 1915 when he was employed by the former Interborough Rapid Transit Company and worked for them until unification of New York transit facilities in 1940. After an outstanding service record during World War II, Col. Bingham returned to civilian life and the New York Transit System in November, 1945, as assistant to the chairman of the Board of Transportation, and subsequently was appointed general superintendent of the NYC Transit System in charge of maintenance and operations; commissioner of the Board of Transportation, and then chairman of the Board. He was appointed executive director and general manager in March, 1954, and resigned in February, 1956.

While engaged in the administration and operation of the largest transit system in the United States, he had also been active as a consultant, both here and abroad, as a consultant and worked in groups engaged in the study and planning of traffic improvements. Included among his many group affiliations is his membership in the New York State SPE.

encounter almost every phase of human activity, who is better qualified than the engineer to bring about order in matters basically engineering, where conflicting interests are involved?

The professional engineer is, of course, keenly aware of the importance to him and his profession of the various national engineering societies. The ramifications of their activities in all the aspects of engineering and engineering endeavor provide him with a reservoir of information on how similar problems to his own have been studied and the recommendations that resulted from such study. He will profit greatly. He will be better informed and therefore more effective in his activities by obtaining the pertinent data available to him.

The traffic and commuter problems confronting his community may be specific or may stem from a number of causes.

If the matter involves the local mass transit company, and today their plight is nation-wide, he should familiarize himself with the true facts of the situation. On occasion, the transit company and commuter railroads issue a statement or offer a plan on which it is expected that action will be taken by the municipal authorities. Is the statement factual? Is the plan reasonable, workable, and in the public interest? Here again the professional engineer can form no reasoned opinion until he is in possession of all the valid facts. With such an understanding of the situation, he can make his voice heard by presenting his views and recommendations to the city fathers, knowing that his is a professional contribution that will at least receive review and consideration.

The traffic problem, however, is, without doubt, of a much more complex nature. The very means of transportation which made possible the growth, and largely determined the physical structure, of the city's urban and suburban complex, is now threatened with strangulation by the rapid growth it made possible.

Because of the almost revolutionary technological advances that have been made in all media of transportation, there are available today in all categories vehicles capable of the efficient and rapid movement of people, and of the commodities upon which they depend. But in spite of the avilability of such effective means for movement, the city is faced with the frustrating question: "How to move?" As a corollary of this situation there has developed in juxtaposition terminal and parking problems of extraordinary magnitude, their solution being tied to spatial areas which do not economically exist today.

THIS traffic problem now confronts every metropolitan area, not only in the United States, but in almost every other country, and the promise of the future is that it will continue to grow in size.

Continually increasing traffic congestion has, of course, been the source of serious concern both nationally and locally, and many eminent groups—governmental, civic, engineering, etc.—have contributed their time and talents in a search for a workable formula.

The great 41,000-mile system of Interstate and Defense Highways construction which has been approved by Congress is a concrete example of constructive action to alleviate the traffic problem on a national scale.

Every state in the Union is involved in this vast project, and within the states their centers of population. Each of these centers, regardless of size, is in the professional engineer's domain of interest and possible activity.

The best over-all plan lacks perfection in its details, and the detail as to route and topography should recognize local conditions as determined by economic and utilitarian considerations.

In this respect the professional engineer in the community can be an important factor in pointing out any inadequacies or undesirable features of the local route planning. It has been said that every year the nation loses to highway, airport, and real estate development projects, over one million acres of our crop raising land.

Too frequently, matters such as these are argued and determined by those with no engineering knowledge or training, and yet they are basically engineering questions.

It therefore behooves the professional engineer to study what is planned for his area and in association with his fellow engineers make his voice heard, so that standards and policies consistent with good engineering practice and sound economy shall prevail. His points of contact would be his state and municipal highway and traffic departments through their executive and engineering branches.

Activities and discussions which are encompassed in the proceedings of the American Planning and Civic Association and the recent sessions of the National Citizens Planning Conference furnish valuable data pertinent to the professional engineer's local situation and can be of great assistance to him in any activity he may consider initiating.

In reflecting upon his local traffic problem, he will have the sobering thought that despite heroic efforts in other communities, the progress toward a satisfactory remedy for the conditions which create the over-all problem has in most cases been disappointing.

THIS is due in a measure to the fact that, generally speaking, action to provide for new or improved transit and commuter facilities, highways and parking areas, is being independently taken. In today's planning it must be recognized that there is a need for the coordinated utilization of all media of transportation. Due to the absence at this time of any satisfactory physical relationship between existing transportation facilities, an extremely heavy volume of unnecessary traffic has been generated.

In his community the professional engineer can study local conditions and determine in his own mind the basic factors contributing to the traffic problem. The conditions

These merry misses are the first to ride Otis Elevator Company's "Trav-O-Later," a new application of the principles of the escalator to overland transportation. Such devices may help solve some future traffic problems.

This is one of Brooklyn's versatile trolley coaches passing a line of double parked cars. Public transit vehicles help ease traffic congestion.

creating the problem will probably be found to stem from: A near bankrupt transit system operating poorly patronized vehicles; streets and highways crowded with private automobiles carrying passengers whom the transit company was enfranchised to serve; adequate railroad facilities for freight haulage operating at a fraction of capacity while trucks further crowd the highways carrying the freight that could be hauled off the highways by the railroads.

Because of the fact that each center of population has its own problem, the professional engineer who lives beside it can, if he so determines, bring his talents to bear upon it to the end that a reasoned and responsible set of recommendations may be placed before the appropriate authorities for consideration.

It may be said that such conduct on the part of the professional engineer constitutes action without invitation. Such, however, is not the case. Engineering imagination and enterprise produced the modern vehicles of transportation. If the harvest of benefits which should result therefrom is threatened with a devastating blight, it is the duty of those who gave it being to seek out and proclaim the remedies.

In this way the conscientious and civic minded professional engineer, in his own community, can do his part to the end that all media of transportation will function as engineers intended they should: "For the use and convenience of man." —***End.***

Author Bingham has just returned from abroad where in Stockholm and Linkoping, Sweden, he worked with the Swedish car builders, the AB Svenska Jarnvagsverkstaderna in the design and development of a high speed, low center of gravity train to be operated on the Swedish National Railways. In the photo on the left below, Mr. Bingham (without hat) is shown talking with Yngve Overgaard, managing director of ASJ. In the photo on the right the Colonel, far left, inspects new type car with test engineers.

Engineering Employment Practices Digest

A short digest of a monthly bulletin published by the National Society of Professional Engineers in the interest of advancing cooperative relations between professional engineers and their employers. To regularly receive the complete publication which is distributed widely to industrial, commercial and educational organizations, write the NSPE, 2029 K St., N.W., Washington 6, D. C.

✓ **For engineering employers and employed engineers, one of the significant NSPE Board actions at Bismarck was adoption of a policy statement urging that an engineering title should be used only when the occupant of the position meets one of the following minimum standards: (1) registration, (2) graduation from an accredited engineering curriculum, (3) an official ruling under the Taft-Hartley or Fair Labor Standards Act relative to an engineering position and "professional" status under one of the two laws. For the full statement see page 26.**

* * * * *

✓ *The White House has released a report of a special top-level committee urging higher pay and other benefits for Federally-employed engineers and scientists. To meet the "critical" failure of the Government to compete with industry, the committee asked legislation to give the Civil Service Commission authority to establish higher pay for engineering and scientific jobs in any area where it is found that higher industry pay makes difficult the recruitment and retention of engineers and scientists. Also, it was suggested that the limitation on the number of higher grade jobs for engineers and scientists be removed. Salaries up to $19,000 a year were urged for those with special qualifications in the key fields. Presently, only a handful of employees are eligible for this rate. Legislation was also asked to permit hiring of college graduates in engineering and science at grade 7 ($4,525 to $5,335) instead of the present entrance rate of grade 5 ($3,670 to $4,430). Other recommendations involve improved fringe benefits, such as attendance at professional society meetings. A complete story on this report will be carried next month.*

* * * * *

✓ Next month's story will also include some details of the new report, *Survey of Attitudes of Scientists and Engineers in Government and Industry*, just released by the Committee on Engineers and Scientists for Federal Government Programs. Meanwhile, the report is available from the Superintendent of Documents, Washington 25, D. C., at 50¢ per copy.

* * * * *

✓ **"New Concepts in the Education and Development of Technical Manpower" is the theme of the 1958 College-Industry Conference of ASEE, to be held at the University of Michigan, January 30 and 31. Speakers will deal with new concepts in education and industrial utilization, including motivation and management concepts obtained through interviews with employed engineers. Four industry speakers will discuss new concepts in professional development. Those desiring to attend should contact the University of Michigan's College of Engineering, 255 West Engineering Bldg., Ann Arbor, Michigan.**

* * * * *

✓ *The average engineering teacher in American colleges and universities earns a salary of $6,634 per year, $550 per month. He adds consulting and other engineering work to bring his total annual earnings to $8,862. He earns more if he teaches in a privately endowed institution than in a public institution, and he earns more on the Pacific Coast than anywhere else in the nation. These are some of the findings of a new study by the ASEE of 1956 engineering salary figures for educators. The survey found that average salaries for young engineers serving as instructors range from $4,214 in public institutions to $4,374 in privately supported schools. Department heads' salaries average $9,117 and $9,893, respectively. Deans earn $10,932 and $11,829, respectively, on the national average.*

* * * * *

✓ Industry faces more direct competition from the Federal Government in the recruitment of engineers and scientists. The Civil Service Commission has authorized Federal agencies to use paid advertising for such recruitment. Each Federal agency will handle its own advertising out of individual agency appropriations.

* * * * *

✓ **The Labor Department has expanded its job placement service for professional and managerial occupations. The new program will be operated by the nation-wide system of state and territorial employment services affiliated with the Department's Bureau of Employment Security. Seventy-eight local and state employment offices will serve as special employment centers to speed the nation-wide matching of men and jobs in professional and managerial occupations.**

• An AE Staff Report •

The Parke Davis Engineering Library in action. An engineer seeking literature on a certain class of products need only check the manufacturer's entries in trade catalogs against the library's card catalog shown here.

Here's How Your Firm Can Have

An Engineering Library

How much is a library worth to an organization? If you have been considering the merits of such an endeavor you will be interested in the progress made by Parke, Davis and Company's Engineering Division Library in the short time since it was established. A librarian was acquired, who proceeded to assemble a miscellaneous collection of materials into a functional and useful collection of library literature.

Over the years a vast amount of material had been accumulating in the Division. Part of it was housed in a room called "the library" but little thought had been given to its organization other than to periodically put the room in order. As far as the trade literature collection was concerned a numbered card index had been made at one time, but as new material was added nothing was deleted. The result – a large collection of superfluous material, occupying valuable space. In addition, each engineer and shop foreman had been maintaining his own "library" of trade literature, tear sheets, reprints, books, pamphlets, etc. Duplication was extensive, and no one knew exactly what the other fellow had. Obviously a central reference source was needed, and engineering management gave serious thought to the necessity of establishing a library. In the fall of 1955, the Parke Davis Engineering Library came into being.

This first year was one of challenge. Having first determined what was to be expected from the library, they were able to lay plans and proceed with the job of organization. Each engineer and foreman was encouraged to turn his collection of material into the library, and a committee was appointed to assist the librarian with the task of "weeding" the huge collection. All outdated material was withdrawn. As the result of "housecleaning," ten jammed filing cabinets had dwindled to five, and some 3,000 pieces of obsolete material had been discarded. 375 bound manufacturers' catalogs were analyzed for content, and duplicate copies discarded. Loose material, placed in sturdy labeled folders, was filed into one alphabetical arrangement by manufacturer's name, and a complete card catalog, cross-indexed by company name, trade name, and local agent was made. A product classification has not yet been attempted, owing to the complexity of such a system. Instead, a Thomas' Register of American Manufacturers was obtained along with trade catalogs, representative of specific industries. An engineer seeking literature on a certain class of products need only check the manufacturer's entries in the trade catalogs against the library's card catalog. So far the system has proved to be quite satisfactory.

Keeping the trade literature collection up-to-date requires little effort. A printed post card, which requires nothing more than an address to bring either a complete catalog or a specific bulletin from a manufacturing concern simplifies the job. Personnel requesting literature see it as soon as it arrives. All trade literature is screened before it is filed, so that only useful material finds its way

into the collection. Perpetual weeding is maintained. As literature is added to a folder, any bulletins which it supercedes are withdrawn, and in addition, each file is examined annually to determine if more up-to-date or additional literature is needed.

TRADE literature, as an important source of technical data, cannot be over-emphasized. Often it is the only place to find the answer to a technical reference query. Each piece of trade literature coming into the Parke Davis Engineering Library is analyzed with this in mind and if considered important enough, the information is carefully noted, and the publication marked to insure that it will not be arbitrarily discarded at some future date. All trade literature requested by the Engineering Division personnel is solicited by the library. Consequently, the individual technician is no longer flooded with material, and the manufacturer is assured that his literature will be seen by those interested and not relegated to the waste basket without ever being opened.

The periodical collection was the next item to be considered. They began by taking a complete inventory, discarding all badly broken files, and determining what magazines would be kept to form a basic reference collection. Storage space was located for back issues releasing more valuable space within the library itself. Magazine holding cards were added to the ever growing card catalog.

The Engineering Division's subscription list was examined for seldom read or unimportant magazines, and these subscriptions were automatically dropped at renewal time. The interests of the engineering personnel were analyzed, and several periodicals reflecting these interests were ordered. Even their secretarial and stenographic staffs were included, and each shop receives at least one periodical a month for circulation among its craftsmen.

Each journal, as it arrives, is analyzed by the librarian for material of specific interest to engineering personnel. Articles relating to professionalism, developments in the field of engineering and in the various trades are drawn to the attention of those individuals who would be most interested. A further analysis brings out articles of general interest for inclusion in the Parke Davis Research Library weekly abstracts, distributed company wide to all management, supervisory, and technical personnel. Routine routing of periodicals from the Engineering Library was discontinued last fall. However, any periodical can still be forwarded regularly upon request and all periodicals may be borrowed directly from the library.

IN addition to the librarian's analyses of journals, each engineer is asked to review one a month. A printed form accompanies the issue, and the reviewer is asked to indicate those articles which he believes will be of specific interest to a co-worker. These reviews are included in the *Engineering Library Bulletin* which is published monthly for distribution to all Engineering Division personnel. Thus, by regularly reading the *Engineering Library Bulletin* and the *Research Library Abstracts* one is given a composite picture of contemporary business and technical literature.

In addition to the librarian's analyses of journals, each engineer in the firm is asked to review one a month. A printed form accompanies the issue, and the reviewer is asked to indicate those articles which he believes will be of specific interest to a co-worker.

With the assistance of the Research Library staff, books which had been purchased through the years, and distributed on "permanent loan" to Engineering Division personnel were collected to form the nucleus of a reference library. Each book has been classified according to the Dewey Decimal System, catalogued by author and title, and analyzed for subject content. Numerous books have been added this year—some at the librarian's discretion, others at the request of personnel. The librarian meets regularly with the Plant Engineering Committee, which acts as an advisory body on technical book selection. As it grows, the book collection will be representative of the technical interests of the division, but such topics as human relations, self-improvement, and management development will not be ignored. A growing pamphlet collection, and a file of ephemeral material supplements the book collection.

The reference function of the library is rapidly developing. In response to specific reference questions the material in the library is considered as a first reference source, and if it proves insufficient the resources of other special libraries, public libraries, university libraries, government agencies, trade and professional associations, etc., are consulted. No company library or librarian should hesitate to join the Special Libraries Association, and attend its local chapter meetings. The contacts made with other librarians and the wealth of knowledge which is contained within their libraries is invaluable to any

specialized library, regardless of size. In fact, the smaller the library, the more necessary the association.

The ways in which a library can obtain information and perform valuable reference service for its clientele are endless. By maintaining an active liaison with various national, international, and state technical associations, professional engineering societies, and government agencies, etc., their library regularly receives notices of publications of interest and events of importance to technical personnel, as well as *copious gratis* publications, which make valuable additions to the reference collection.

A file of university brochures covering courses of interest to the division is maintained in the library, and a bulletin board, indicating local and national events of wide interest and featuring library activities is displayed in the engineering office.

brary is not large, occupying only 260 square feet, but by careful planning they have managed to create a pleasant atmosphere for their personnel.

A STRONG spirit of cooperation exists between the Engineering Library and the longer established and much larger Research Library. Material reaching one library which would be of more value to the other is quickly transferred and patrons are referred from one library to the other whenever it appears that better service might be received as a result. The Research Library maintains a master catalog of all books purchased by Parke, Davis—thus cancelling the possibility of unnecessary duplication and pinpointing the location of every book available in the company.

The Parke Davis Engineering Library has at least par-

The Parke Davis Engineering Library is pleasant in physical appearance. When the new library was established additional shelving was purchased; old shelving and filing cabinets were given new coats of paint; the walls were beautifully grained, and matching library furniture was purchased.

A reference file of names and addresses of professional and trade associations, companies, agencies, "hard-to-find" types of data, articles not included in published periodical indexes, technical terms, abbreviations, and other items of specific interest which might be difficult to find, has become a part of the library card catalog.

A film catalog collection is available to help supervisors plan training programs, and on occasion films have been brought in under the auspices of the library. For example, in recognition of National Engineers' Week this year they borrowed the film "The American Engineer" from the National Society of Professional Engineers for a showing to all the division personnel.

The Engineering Library Bulletin is published monthly, and is a twelve-page brochure, which includes announcements of new books and pamphlets, bibliographies on topics of general interest, announcements of professional events of local and national interest, as well as brief notes on library activities. They have found this to be an excellent source of communication between the library and its patrons. In addition spot announcements of new books are issued periodically.

Having considered the material aspect of the Engineering Library, they turned their attention briefly to its physical appearance. Additional shelving was purchased; the old shelving and the filing cabinets were given a new coat of bright paint; the walls were beautifully grained, and some matching library furniture was purchased. Their initially overcome the perennial problem that faces all libraries, that of selling library service. New personnel coming into the division are introduced to the librarian as part of their orientation program. They are given a brief tour of the library; its facilities are explained, and they are given some literature to take away including a brief history of the company, a Layman's Bibliography on the Pharmaceutical Industry, and a short resume of the service they can expect from their library.

The problems of library organization are numerous and complex. Their aim is to secure and assemble material in order to give systematic and regular information service to cover the immediate and future interests of the organization of which they are a part. This will necessitate the acquisition and maintenance of an adequate collection of books, periodicals, pamphlets, government publications, and various and sundry items built around the interests and demands of their engineering and maintenance personnel, all of which must be made available for use by proper classification, cataloguing and indexing. These processes of documentation must be adhered to scrupulously if the resources are to be used effectively.

The benefits to be derived from a well-organized library are numerous. It takes considerable time, much concentrated effort, and even then the "job" will never be finished. But you may rest assured that a library is one investment that will go on paying dividends for years to come. ***End.***

Engineer Violates Conn. Statute

A REGISTERED professional engineer, who entered into a contract with a client for the rendition of architectural services, was denied recovery in a suit to collect his fee on the ground that he was not licensed or registered as an architect, and thus had violated a Connecticut statute. This ruling was recently handed down by the Court of Common Pleas, Hartford County, Connecticut.

The case arose when the client, seeking an architect to design and draft plans and specifications for a commercial building, contacted the professional engineer, believing him to be an architect. The parties subsequently entered into an agreement which described them as "Owner" and "Architect," and which was prepared on a printed form entitled "Owner and Architect Form of Agreement." The contract provided that certain standards of the American Institute of Architects would be made a part of the agreement. Because of this contract form and the apparent intentions of the parties, the Court concluded that this clearly was an agreement for the performance of architectural services by the professional engineer for and on behalf of the client. When the client defaulted in payment of the agreed-upon five per cent fee, the engineer brought suit.

In denying recovery for the engineer, the Court looked to the Connecticut statutes which provide that no person shall practice architecture or use the title "architect," or in effect do anything that would indicate to the public that such person practices or offers to practice architecture "unless such person shall have secured a certificate of registration." Since the engineer based his claim upon architectural services rendered, though not a licensed or registered architect in the State of Connecticut, the Court stated that "He seeks to recover on a contract for architectural services rendered in clear violation of the statutes. Such a contract is illegal and void as against public policy.

"Although the performance of architectural work incidental to the engineering work is permitted by a registered professional engineer, it is not to be construed as permitting said engineer to do the entire architectural job simply because a portion of the architectural work is incidental to the engineering."

(Continued on page 35)

. . . for Xmas Gifts

certificates and emblems are available

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
Order one of the handsome certificates showing your NSPE affiliation for your office wall.
The beautiful Society emblem is available in several styles. See coupon below.
The Professional Engineer insigne shown above is available styled as cuff links. Can also be ordered in "large 3" size as a metal automobile emblem.
The emblem mounted as a tie chain makes a perfect gift.
The emblem worn as a tie clasp is distinctive jewelry for any professional engineer member.

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
2029 K Street, N. W., Washington 6, D. C.

I am enclosing my check in the amount of $ _____ for which please send me
For Professional Engineers, P. E., and Junior Members, J. M.

J.M.	P.E.	
☐	☐	Certificate No. 1 with Chapter and State designation, priced at $1.50
☐	☐	Certificate No. 2 with State designation, priced at $1.50
☐	☐	American Engineer Binder, priced at $3.00
☐	☐	Emblem, mounted as a charm, priced at $5.00
☐	☐	Emblem, mounted as a pin, priced at $5.00
☐	☐	Miniature Emblem, mounted on lapel button (⅜"), priced at $2.50
	☐	Miniature Emblem, mounted on tie clip, priced at $2.50
	☐	Emblem, mounted on tie chain, priced at $2.50
	☐	Professional Engineer Emblem cuff links (set), priced at $3.00
	☐	Automobile Emblem (3"), priced at $1.00

PLEASE MAIL TO _____

ADDRESS _____ REG. NO. _____

CITY _____ ZONE _____ STATE _____

I am a member of the _____ Society of Professional Engineers.
State

(and if Certificate No. 1 is desired) _____
Chapter

Charms and pins (exclusive of lapel buttons) engraved upon request

The AIEE Unity Plan— Editorial Comment

The American Institute of Electrical Engineers through its president, M. S. Coover, propose a plan for allocating and coordinating the activities in which the engineering societies of the United States interest themselves. Dr. Coover's statement was published on page 29 of the July, 1957, AMERICAN ENGINEER with an introduction by Morris D. Hooven, a past president of AIEE. NSPE is giving the plan exhaustive study.

The AIEE plan has brought forth editorial comment by most of the engineering journals and statements by the officers of some of our major engineering societies.

The plan merits the study of all engineers who are interested in the unity of the profession. As its contribution to giving the plan full publicity, the AMERICAN ENGINEER reprints herewith pertinent articles, editorials and letters from members. Others will follow in later issues.

Letters from engineers expressing their views on the AIEE plan will be welcomed and will be printed in the AMERICAN ENGINEER, within the limitations of available space.—THE EDITOR.

Individual Engineer Wants Unity

I HAVE yet to encounter an individual engineer anywhere who does not desperately want real unity in the engineering profession. The governing boards of all the national societies are made up of ordinary engineers like you and me—and individually they desire a unified profession just as devoutly as we do.

The trouble is that there is no agreement among individual engineers, hence none among the boards of the national societies, as to how it is to be achieved. A common meeting ground has got to be found soon.

The simple fact is that, at almost all local levels around the country, unity of the engineering profession already is an established and cheering achievement, working effectively to advance the prestige—and hence the social and economic betterment—of all engineers in all branches of the profession. At the national level there is the same deep-seated yearning and spontaneous desire for unity-in-fact. But the innate problems are more complex, more formidable.

To the extent that these problems arise from personal and professional jealousies—and to some extent they do—we can have no sympathy with the situation. But not to recognize it is only to be unrealistic.

In his apportionment of human character, God has played no professional favorites. And despite the engineer's widely recognized and highly commendable capacity for objectivity, many individual engineers possess well ordered sets of immutable prejudices. And when these prejudices have taken their initial set, such engineers do not want anyone to confuse them with the facts.

Administrative staffs of national engineering organizations usually are directed by engineers in the full-time employ of these organizations. These engineers are human too, and are therefore subject to such human foibles as professional jealousy and empire-building ambitions. This, to some degree at least, may have handicapped our national aspirations for more effective unity. If so, the remedy would seem to lie in closer and more frequent communication and personal liaison between elected, non-paid officers and directors of the several organizations.

As will be recalled, the Board of the National Society of Professional Engineers, after long and serious consideration a few years ago, voted to decline the invitation to become a member of Engineers Joint Council. As a member of NSPE, I felt then that this must have been a very difficult decision.

Since then I have definitely concluded that the interest of both NSPE as an organization and the engineering profession as a whole would be best served were NSPE to become a constituent member of EJC. Here are the fundamental reasons why I believe NSPE should reconsider its previous decision. Actually there are three organizations undertaking to function wholly or in part as the voice of the engineering profession. In addition to EJC and NSPE we also have, of course, the Engineers' Council for Professional Development. While ECPD is identified in the minds of most engineers as a highly regarded curricula accrediting agency, its aims and purposes far transcend accreditation. Basically its objectives are the same as those of EJC.

We do not need both EJC and ECPD. Fortunately there is a strong movement for consolidation, a movement with definite promise of early success.

When and if these two organizations are consolidated, a stronger EJC or equivalent of some other name will emerge. Both EJC and NSPE for several years have been growing in membership and influence at relatively satisfactory rates. I think the rate of growth of each may be expected to increase in the future. Thus, as matters stand, the prospect is for two stronger but still divided and frustrated "voices of the engineering profession." Neither has any plans for going out of business. Neither needs to. There is a mechanism for NSPE to become a part of EJC but none for EJC to become a part of NSPE. I am fully convinced that by the exercise of some real professional statesmanship on both sides, NSPE could become a happy and useful constituent society of EJC without sacrifice of identity and with assurance of greater future strength inside than outside EJC.

Engineering not only suffers the ordinary frustrations and heartaches of disunity, it also suffers the deeper pain of wounded pride, because with all our professional intelligence, we have not been able to be objective about the biggest problem of the biggest profession.

This is no plea for patience about our lack of unity. Certainly I am not suggesting that we forget the matter for a generation or so and let it solve itself.

On the contrary, I urge engineers to keep practicing unity assiduously—

as they have been—at state and local levels. Moreover, they should literally bombard their governing bodies with their expressed yearning for some kind of genuine national unity. Tell them that the profession is going to have unity. Worry them to death about the matter! Never let up!

—Editorial by Mason G. Lockwood, president, ASCE, from *Civil Engineering* magazine, August, 1957. Copyright, 1957, ASCE.

"Heard Around Headquarters"

Unity and the AIEE proposal for joining all engineering organizations into groups of educational, technical, and professional responsibility, is the topic of the day around headquarters.

The proposal of M. S. Coover, former AIEE president, suggests:

EJC represent the engineering profession on technical matters.

ECPD provide the medium for guidance on everything pertaining to engineering education.

NSPE undertake general promotion of the professional aspects of engineering and handle the financial problems of engineers.

So far, the AIEE officers have given Coover's proposal their support, but the proposal has not been submitted to the membership at large.

Among the other Societies, some organizations are for the idea, others are considering it. And, generally, there is considerably more talk than action.

ASME—President William F. Ryan plans, at the Nov. 30 board meeting, to ask that the ASME take action to work toward putting the AIEE proposal into action. "I'm going to ask them to stop talking and act," Dr. Ryan added. And, unlike many presidents at the end of their terms, he is not going to ask for any radical change in structure, "just that they use the present structure to advantage."

"If everybody would concentrate on unifying the engineering profession, it could be done in a year and a half," Dr. Ryan added that the merger of engineering organizations has been in the discussion stage for a period of about 70 years now.

AIME—The miners have not circulated the Coover proposal among their members yet because they do not know if they agree with it. A committee, headed by T. B. Counselman, of Behre, Dolbear & Associates, Consulting Engineers, has been appointed to study the AIEE proposal. . . .

ASCE—The board of direction, on June 3, voted that the Coover proposal "not be published in *Civil Engineering* at this time."

AIChE—The Coover proposal has not been printed in the Society publication, nor has it been discussed at a board meeting.

NSPE—The AMERICAN ENGINEER reprinted Coover's proposal, and a committee of past presidents has been appointed to study the AIEE proposal.

—From "Heard Around Headquarters," *Consulting Engineer* magazine, September, 1957. Copyright, 1957, CE.

Another Try For Unity

Another plan for unifying the engineering profession has been placed before the engineers of this country for their consideration . . . This one is unique in that it has the endorsement of the board of one of the large Founder engineering societies, the American Institute of Electrical Engineers, which also is one of the main contributors to the support of Engineers Joint Council.

Briefly, the new plan sets up the National Society of Professional Engineers as the unifying organization in all economic and professional matters, provided the NSPE will open its membership to unregistered engineers. Engineers Joint Council would be continued, but its function would be changed radically, being limited to coordinating the purely engineering activities of the sponsoring societies. Also, the big engineering societies that originally set up EJC as their spokesman on national questions affecting engineers would be required to drop their economic and welfare activities, delegating all such work to NSPE. Finally, all decisions on educational matters would be turned over to the Engineers' Council for Professional Development as the coordinating agency in that field.

The prospects for this newest unity proposal do not appear to be bright. One obstacle to its acceptance is the requirement that the National Society of Professional Engineers open its doors to men who are not registered as professional engineers. Registration is the keystone of the arch supporting NSPE. To suggest that this requirement be dropped is not realistic.

Nor does it seem probable that all the societies now sponsoring the Engineers Joint Council are ready to scrap practically all it has done and is doing on national and economic issues, as proposed under the new unity plan. Those societies would not have the same voice in the affairs of NSPE that they now have in EJC. Similarly, we doubt that the Founder Societies are ready to drop all their non-engineering activities. That appears especially true of the American Society of Civil Engineers which for years has been active on economic issues affecting engineers.

The weakness of this latest unity plan is that it brushes aside these realities. It ignores the fact that the National Society of Professional Engineers, although continually growing in membership and prestige, is not yet in a position to speak for the entire profession. It disregards the considerable accomplishments of Engineers Joint Council in providing a vehicle for unified leadership on both the technological and professional fronts. And it assumes that unity can be achieved by fiat instead of by evolution.

As a first step in this evolution, NSPE should become a member of EJC. Working from within and in concert with the present constituent societies of EJC, it could—without in any way losing its identity or compromising its objectives—help the entire profession on the road to unity. Any plan drawn up now, which contemplates turning aside either NSPE or the EJC, is doomed to failure.

Reprinted from *Engineering News-Record*, August 29, 1957, Copyright, 1957, McGraw-Hill Publishing Co.

Texas Society of Professional Engineers—Second Annual Employment Practices Conference—November 15, 1957, Hilton Hotel, San Antonio, Texas.

Arkansas Society of Professional Engineers—Annual Meeting, November 22, 1957, Marion Hotel, Little Rock, Arkansas.

NSPE Spring Meeting—February 13-15, 1958, Michigan State University, East Lansing, Michigan.

NSPE Annual Meeting—June 11-14, 1958, Chase-Park Plaza, St. Louis, Missouri.

Animated TV Films New Engineers' Week Promotional Aid

STATE and local programs for the 1958 National Engineers' Week observance moved out of the "planning stage" this month as preparations took shape for the events of February 16-22.

As nation-wide sponsor of the Week, NSPE has received a number of advance reports indicating a broader-than-ever participation in the 1958 events by industry, educators, government agencies, and individual engineers.

The theme for the Week—"Engineering Builds Broader Horizons"—is expected to result in considerable publicity because of its obvious connection with the International Geophysical Year. The theme was chosen because during the IGY man will extend his horizons further than ever before. Engineering has given us the instruments, the rocket fuels, the electronic devices, and all the other equipment which is being used to gather information during this year of international scientific cooperation.

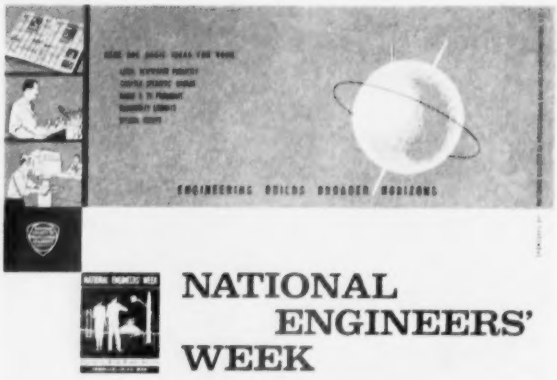
Promotional kits for the Week, developed by the National Society staff under the direction of the National Engineers' Week Committee, have been sent to all state societies and local chapters. The kits are divided into sections on publicity, radio & television, speeches, and special projects. Each section is designed to generate ideas for local Engineers' Week projects.

Order forms carrying prices of all promotional aids offered by NSPE are being sent to state societies and local chapters early in November. The forms will be mailed with the first in a series of "action letters" devoted to suggestions for local programs for the Week.

A new approach in TV films for the Week is being offered by NSPE this year. A set of five 1-minute films has been produced in animated form—that is, using animated art work for the visual in place of live actors. Narrated by a network announcer, the films feature a graphic approach to illustrating the theme for the Week.

(A special message from National Engineers' Week Chairman John L. Bahr to all local committee chairmen for the 1958 event.)

"In this issue of the AMERICAN ENGINEER readers will find an order form describing the promotional aids offered this year by NSPE. The National Society headquarters staff prepares and distributes this material without any increase in personnel. Consequently, it is important that orders for the Week be placed as early as possible. A heavy rush of orders during the last few weeks before the February event results in a situation that can only be handled through overtime work. The latter, of course, is reflected in increased costs to the National Society for the Engineers' Week program. I am, therefore, urging all local and state Engineers' Week committee chairmen to place their orders for the promotional aids as soon as possible."



Here is the cover design for the 1958 National Engineers' Week promotional kit prepared and distributed by NSPE. The kits, containing suggestions and promotional ideas for chapter use, have been mailed to all NSPE affiliates. A limited number of additional kits will be sent on request.

The animated type of "spot announcement" film was chosen because of its appeal to a wider audience than the straight, or "live actor" type of filmed announcement.

All five films have been made to TV network standards, and will qualify for public service time during station breaks. One of the films covers engineering in general, and the other four represent tributes to civil, mechanical, electrical, and chemical engineers.

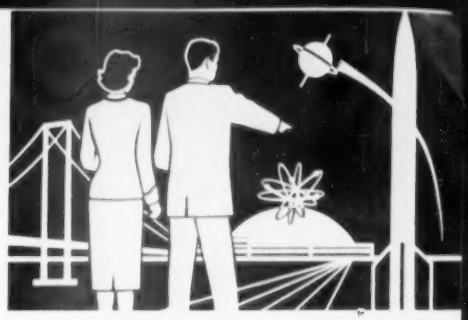
A 15-minute tape recorded radio program entitled "Engineering Builds Broader Horizons" is also offered for the 1958 Week. Radio network performers are featured in a dramatization of the story of how engineering accomplishments are behind the activities of the International Geophysical Year. The tape recording may be used as a complete program for fifteen minutes of public service time, or it may be uesd in conjunction with a panel discussion or other locally developed program.

Available from NSPE again this year is the tape recording for the 1957 Week entitled "Engineering and the Atomic Era." This is a dramatization of engineering in a variety of nuclear energy uses.

A new promotional item offered by the National Society this year is the Engineers' Week lapel button. The 1½-inch badges carry the 1958 Engineers' Week poster design, and may be ordered in quantity from NSPE at the following prices:

Number of Buttons	*Price per Each*
100 to 500	$ .15
500 to 1,000	$ .10
1,000 to 3,000	$ .07
3,000 to 5,000	$ .05
over 5,000	$ .04

Use these aids for NATIONAL ENGINEERS' WEEK...



HERE ARE the basic promotional aids that will give dramatic impact to your program—the kind of impact that will result in public attention in local newspapers, and on radio and television programs. All these aids have been expertly prepared to portray engineering as building broader horizons for all of us. Use the handy order coupon below.

1. **ANIMATED TV FILMS:** A set of five 1-minute TV films, in animated form, designed to dramatize the 1958 Engineers' Week theme. Produced under expert supervision to meet network standards, these films feature tributes to civil, mechanical, electrical, and chemical engineers. All films will qualify for public service TV time during station breaks. A set of these films will give "TV impact" to your Engineers' Week program. Price: Set of five films, $25.

2. **"ENGINEERING BUILDS BROADER HORIZONS:"** A 15-minute tape recorded radio program telling the story of how engineering developments are behind every phase of the International Geophysical Year. Radio network performers dramatize the contributions of the engineer to the current scientific exploration of our planet. Excellent for use on public service time. Price: $6 each.

3. **LAPEL BUTTONS:** A high-quality lapel badge featuring the Engineers' Week poster design in bright blue on a white background. May be distributed to high schools, science clubs, and other groups. Each chapter or state society can set its own price for button sales. Prices: 100 to 500—15¢ each; 500 to 1,000—10¢; 1,000 to 3,000—7¢; 3,000 to 5,000—5¢; and over 5,000—4¢.

4. **SET OF SEVEN TV SLIDES:** Obtain extensive TV coverage through the Week with these slides displaying poster-type art work and printed copy calling attention to engineering. May be used during all TV station breaks as public service announcements. Price: $10 per set of 7 slides.

5. **POSTERS:** Colorful 9 x 11-inch pasteboard posters carrying the 1958 Engineers' Week design and theme. This is the basic promotional item for calling attention to the Week. Use on bulletin boards, in window displays, school exhibits, etc. Large size (18 x 22 inches) also available. Prices: 9 x 11, $4 per 100; 18 x 22, $5 per 100.

6. **PAPER BANNERS:** Excellent for display use. Three feet long by 6 inches wide. Has poster design and words "National Engineers' Week" in color. Price: $4 per 100.

7. **NATIONAL ENGINEERS' WEEK SEALS:** Use these brightly colored seals on all office mail from now through February 22. Poster design printed on 1½-inch gummed paper. Price: $3 per 1,000.

8. **NEWSPAPER MAT STORY ON ENGINEERING CONTRIBUTIONS TO THE INTERNATIONAL GEOPHYSICAL YEAR:** A feature article on how engineering developments in instruments, rocketry, and other fields are the basis for scientific study of the world around us during the IGY. Prepared on mat, ready for immediate insertion in daily or weekly newspaper. Price: 50¢ each.

9. **NEWSPAPER MAT STORY ON ENGINEERING AND OUR USE AND SUPPLY OF WATER:** A feature article on how engineers are involved in such problems as water purification, irrigation, flood control, hydroelectric power sites, harbor development, large city reservoirs, etc. Prepared on mat, ready for immediate insertion in daily or weekly newspaper. Price: 50¢ each.

10. **LOGOTYPE:** A metal cut of the 1958 poster design to insert in advertising, special sections of newspapers, industrial house organs, magazines, and other printed matter. All state society and chapter publications should have one. Price: $1 each.

11. **"ENGINEERING AND THE ATOMIC ERA:"** A re-issue of the 15-minute tape recorded radio program distributed last year. Just as timely this year. Network performers dramatize the engineering efforts behind atomic power, radioactive isotopes, and other applications of nuclear energy. Price: $4 each.

ORDER YOUR AIDS NOW!

National Society of Professional Engineers
2029 K Street, N.W.
Washington 6, D. C.
Sirs:

Please rush me items indicated. I enclose a (check .....) (money order .....) in the amount of $ ...... I understand remittance must accompany order.

Name .....
(PLEASE PRINT)

Address .....

City ..... **State** .....

1. One-minute TV films @ $25 per set.
2. Radio tape, "Engineering Builds Broader Horizons," @ $6 each.
3. Lapel buttons 100-500 @ 15¢ ea.; 500-1,000 @ 10¢ ea.; 1,000-3,000 @ 7¢ ea.; 3,000-5,000 @ 5¢ ea.; over 5,000 @ 4¢ ea.
4. TV slides. Set of 7 slides @ $10 per set.
5. Posters, regular size, @ $4 per 100.
   Posters, large size, @ $5 per 100.
6. Banners @ $4 per 100.
7. Seals @ $3 per 1,000.
8. Newspaper mat story on engineering contributions to IGY @ 50¢ ea.
9. Newspaper mat story on engineering and use and supply of water @ 50¢ ea.
10. Logotypes @ $1 ea.
11. Radio tape, "Engineering and the Atomic Era," @ $4 ea.

'Sputnik-inspired' Training Programs Hit by NSPE Board

OPPOSITION to any Sputnik-inspired crash program for training engineers and scientists has been expressed by NSPE.

The National Society's opposition to such a program is summed up in a two-page statement urging that the nation "not rush into hastily-improvised actions having to do with the education of engineers which would only aggravate a complicated and difficult condition that cannot be solved by spur-of-the-moment solutions."

The statement, approved by the NSPE Board of Directors at the fall meeting in Bismarck, N. D., called attention to understandable confusion and uncertainty among engineers and the general public regarding the so-called "shortage" of engineers in recent years.

The National Society listed seven points as the basis for its stand on current developments regarding the supply of engineering talent. These points are:

1. Special action to increase today's supply of engineers is not considered necessary or desirable since engineering enrollments are at an all-time high and are continuing to increase.
2. An artificial stimulation to further increase enrollments in engineering will severely handicap institutions that devote adequate attention to the capable students.
3. Assumption that Russia launched the earth satellite before the U. S. solely because it had trained more scientific personnel in recent years than this country, we believe is not valid and could lead to unwise and damaging decisions. We believe it would be more logical to assume that the controlling factors were priorities assigned to money and emphasis, rather than a shortage of technical personnel in the U. S.
4. Emphasis now more than ever should be placed on quality rather than quantity. Potentional engineers should be better grounded in fundamentals when they enter the engineering educational program and should be better informed as to the qualifications essential for an individual to become a successful engineer.
5. In view of the present limitations of facilities and faculties, the substantially-increased enrollments in our engineering institutions are causing serious difficulties at the present time. Any program which will substantially add to the present number of students must include means to resolve these limiting factors.
6. It should be emphasized that projects such as the earth satellite, guided missiles, etc., depend on highly-advanced technology—a mere increase in numbers of those with first degrees will not provide the type of highly-advanced technical knowledge which is necessary. It should also be noted that any program based on present needs will not succeed in solving today's technological problems. A program starting today will not produce a single highly-qualified engineer or scientist for at least six years.
7. Experience has shown that we have wasted engineering talent by using it at a level below that which it is capable of performing. Improved utilization of engineering talent can do more for an immediate need than any other single program.

(Ed. Note: The complete NSPE statement is available free by writing to the national headquarters.)

In other action, the Board heard Allison C. Neff, vice president, Armco Drainage and Metal Products Co., and chairman of the NSPE Committee on Improved Professional Relations, call for serious study by all engineering groups of the AIEF unity plan which would divide engineering activities into three fields and assign the technological to EJC, the educational to ECPD, and the professional to NSPE.

An over-all scene of the Board of Directors at their recent meeting in the House chambers of the State Capitol in Bismarck, N. D.

Neff's Committee proposed a 10-point program to promote increased consideration of the unity move. These included: the preparation of a booklet for distribution primarily within NSPE which will present the issues, including suggested ways of exploring that portion of the AIEE plan which states, ". . . expanding its (NSPE) individual membership organization to include, as well as registered engineers, those qualified members of the profession whose work does not by law require registration . . .;" the circularization of a questionnaire to the state societies seeking their views on the plan; and consideration of the relationship of NSPE to EJC in view of the further study of its objectives now being made by EJC.

The National Society Board also approved a $15,000 yearly civil engineering scholarship program set up by Armco Drainage & Metal Products. The Board action paved the way for NSPE to enter into agreement with associations, corporations, foundations, or individuals desiring to make scholarship and fellowship grants in the engineering field.

In other educational matters, the National Society

adopted a program for organizing NSPE student chapters made up of students registered in accredited colleges of engineering.

Approval was also given for encouraging "sounding board" organizations to become functional groups in local chapters of the professional engineering society, consistent with local, state, and National Society constitutions. The "sounding boards" are defined by NSPE as non-bargaining associations of engineers, including those in management, whose purpose is to improve communications between professional engineering employees and management.

Three sets of standards were approved by the NSPE Board as "the only basis on which any title or designation should include an engineering reference. The three are:

1. Registration as a professional engineer or engineer-in-training under a state engineering registration law.
2. Graduation from an accredited engineering curriculum leading to a bachelor's degree.
3. An official ruling designating an individual or a group in an engineering capacity as meeting the definition of "professional employee" under the Taft-Hartley Act, or the Fair Labor Standards Act.

The NSPE policy states that all persons not coming within one of these categories should be designated by an appropriate title without reference to "engineer" or "professional engineer."

The Ad Hoc Committee, as directed by the Board at the annual meeting, presented a revised wording of the policy on Federal legislation for engineering education. A further revision was presented from the floor, and this revision together with the statement of the Committee was referred back to the Ad Hoc Committee for reporing at the spring meeting.

Above: **Another "after hours" activity at Bismarck: A panel discussion on professional engineering on CBS' KBMB-TV. From l. to r.: Moderator Paul H. Robbins, ex. director, NSPE; and NSPE'ers B. H. Backlund, Omaha, Neb.; Ed Booth, Bismarck; and Arlow V. Ferry, Kansas City, Mo.** ***Below:*** **After the meeting the Directors prepare to leave on a special Northwest Airlines flight to Minneapolis.**

The committee reports follow:

FUNCTIONAL SECTION FOR CONSULTING ENGINEERS IN PRIVATE PRACTICE

This Section submits herewith an informative report concerning plans and progress. Board action is not requested of the Board.

Task Forces.

Task Forces Nos. 1 and 4 have been discharged with assignments completed.

Task Force No. 2 will complete its work during the year and will have a compilation and study of fee schedules for use with the EJC Manual of Consulting Practice.

Task Force No. 3 continues its studies on the practical application of ethical practices.

Professional Liability Insurance

Now in effect with a substantial number of policy holders. We are advised that due to our efforts and reasonable success there are indications of additional domestic insurance companies entering this field.

American Thrift Assembly

As of September 23 there has been subscribed a total of $2,238.50. This is in addition to the $1,500 contributed by NSPE. The recent session of Congress failed to pass the desired legislation. However, it is believed that sufficient educational work has been done so that the next session should act favorably. Our funds are being conserved so that we may equitably partake with other professional groups in this much needed effort.

EJC Manual of Consulting Practice

Vice Chairman Leslie C. Gates has continued to represent NSPE on the EJC Committee preparing this manual (originally proposed by ASME). Thanks to his efforts and those of Section Secretary Sanford (representing AIEE on the Committee), NSPE will be considered as one of the organizations sponsoring the manual. Task Force No. 2, under chairmanship of Frank Sanford, is to complete a valuable supplement to the manual—a compilation of fees as recommended by the several state societies and an analysis of terminology.

Interprofessional Relations

Regional Vice Chairman N. P. Turner of Houston is continuing our work with this Committee in seeking establishment of a set of forms for working agreements between engineers and architects.

Engineering Practices Committee

President Dyer has appointed this Section Executive Committee as the Engineering Practices Committee pending further action on the committee reorganization plan. Budget request has been made in the name of the Section for both.

State Sections

By no means do we have a complete list of state and chapter sections. Known to be established on the state level are those in some fifteen states, most of which have one or more sections on the chapter level.

Board Action: Report Accepted

NATIONAL AFFAIRS

The major part of this report is for the information of the Board to keep it informed as to the manner in which the Committee has carried out the direction of the Board. *Two recommendations* for Board action are included. The *first* is the adoption of the Internal Policy dealing with Expense Account, as submitted to it by the Executive Committee, and the *second* dealing with the standing of all other policies and committee work for this administrative year. This second recommendation modifies, only in so far as time is concerned, the Board's directions to the Committee.

Committee Action

A. The National Affairs Committee has reviewed policies adopted at the Dallas meeting of the Board and has included these policies in the revised Professional Policies booklet.

B. The policy on Engineer-Management Communication is verbatim to that approved by the Board, except that the asterisk and its reference are not included.

C. The wording of the policy on the Highway Program (Board

Action 57-112 on Resolution 10-57) has been slightly changed to fit into the general language pattern for the other policies, with substance, of course, remaining unchanged. The Committee felt that both of these policies should be put under the major heading of "Employment Practices" with subheadings of "Engineer-Management Communications" and "Highway Program" and to appear in proper sequence with the present subheading "Gentlemen's Agreement."

D. By direction of the Board, the two policies presented at the Dallas meeting entitled "Engineers in the Federal Government—Outside Employment" and "Engineering Education—Federal Policy" have not been included in the revised booklet, pending further Board action on these policies.

E. Approximately one week after the Dallas meeting, the Bureau of Public Roads withdrew its restrictive clause to which the policy entitled "Employment Practices—Highway Program" presented to the Board at Dallas specifically referred. Therefore, the last two paragraphs of this adopted policy became meaningless and your Committee has deleted them and retitled the policy "Employment Practices—Employment Limitations." The Committee feels that the Board directed and authorized it to keep such policies as nearly current as possible by excluding obsolete reference.

F. The Executive Committee is of the opinion that Internal Policy No. 16, as presented to the Board at Dallas, should be reviewed and revised. Accordingly, this policy has been removed from the present policy booklet and the policy suggested by the Executive Committee *is recommended for adoption at this time.*

Committee Work and Schedule

A. Because of the usual heavy schedules for the Board at the spring and annual meetings the Committee scheduled its work so that consideration, reconsideration and review of the internal and external policies could be accomplished at the fall Board meetings. The Committee has not found it possible to meet this proposed schedule and, for budget reasons, it is unwise for the Committee to meet again during this calendar year.

B. The Committee *recommends to the Board* that the policies now developed stand until review at the fall meeting in 1958 and, subject to Board and Executive Committee direction, that the work of the National Affairs Committee for this administrative year be in the area of special assignments and review of any particular policies which might require reconsideration.

Board Action: Recommendations Approved

NATIONAL DEFENSE

This Committee is authorized by Bylaw #16 of NSPE. It is affected by provisions of the report of the Committee Structure Study Committee as submitted to and accepted by the Board of Directors, June 6-8, 1957. In this report it was recommended that your National Defense Committee be eliminated and such items within the present scope of the Committee as concerning voluntary participation of professional engineers should be assigned to the National Affairs Committee, while items concerning employment should be assigned to the Engineers-in-Government Subcommittee. This portion of the report of the Committee Structure Study Committee was accepted, to be effective upon the formal adoption of necessary bylaw changes (but not to affect the current administrative year). Future reports of this Committee will therefore be divided in two sections so that continuity of effort can easily be accomplished by future committees, as recommended by the Committee Structure Study Committee. This Committee has made a study of Senate Bill S. 2104 and also of the report of the Defense Advisory Committee on Professional and Technical Compensation, Volume No. 1—Military Personnel (Ralph J. Cordiner, chairman).

Senate Bill S. 2104, introduced by Mr. Symington, proposes to change the method of computing basic pay for members of the uniformed services to provide term retention contracts for reserve officers, and for other purposes. This bill appears to be a desirable one although it is weak in professional aspects. Certain provisions however would work to the benefit of professional engineers in the armed services, but only as the same benefits would be extended to much larger groups. The consensus of the Committee is that professionalism is only indirectly involved and to a negligible extent. It is recommended that NSPE should not take an official position with respect to this bill.

The Cordiner report appears to be much more complete than previous studies and will surely merit continuing study by NSPE as well as close examination of any proposed legislation which may originate as a result of conclusions or recommendations embodied in this report. Professional aspects again are not treated to any great extent and it is the recommendation of the Committee that NSPE should not take an official position with respect to Volume No. 1 of this report. The Committee does feel that something must be done to more adequately compensate our military personnel and provide career incentives.

It may be that professional aspects will be given more consideration in future reports emanating from the Cordiner Committee, but until such reports are published and studied we recommend that NSPE refrain from taking an official position on Volume No. 1 of this report.

Board Action: Recommendations Approved

ENGINEERS-IN-INDUSTRY SUBCOMMITTEE

RECOMMENDATIONS

1. That a statement of NSPE policy (Attachment 1) on engineering titles be approved.

2. That the Board adopt the attached statement (Attachment 2) on sounding board organizations.

Discussion of Recommendations

1. The proposed statement of policy on engineering titles deals with a problem which is basic and common to many of the problems of the engineering profession—a definition by which meaningful distinctions can be made between qualified engineers and those not qualified. This has been a particularly important problem for engineers in industry and, as indicated in the proposed statement, the advancement of professional status has been impeded by the granting of engineering titles to non-qualified personnel.

We have prepared this statement to be used primarily as an educational tool on the part of both management and individual engineers. It is reasonable to expect, we think, that a formal declaration by the National Society will stimulate further consideration of the title question on the part of management.

Ideally, individual qualification for an engineering designation

Know Your Society! Read These National Committee Reports.

should be controlled by registration as a professional engineer, or certification as an engineer-in-training under the state laws. As a practical matter, however, we are too far removed from that ideal to expect to reach it in one step. Consequently, the first proposed step is to seek the restriction of engineering titles to those who meet other recognized factual tests. It is recognized that the standards proposed will eliminate engineering titles for some persons who are recognized by their employers and associates as performing engineering work satisfactorily on a par, or, in some cases superior to that performed by other engineers who meet one or more of the proposed standards. Nevertheless, it is felt that this issue must be faced head-on if we are to achieve real progress in solving the problem of the abuse of engineering titles. The proposed standards do not arbitrarily require the abandonment of engineering titles for any qualified persons. Such persons can and should demonstrate their qualifications through registration which is open to all without restriction as to formal education.

2. By its long-standing endorsement of the Kearns "Freedom of Association" legislation, and by the policy statement on engineer-management communications adopted by the Board in June, 1957, NSPE has already recognized the "sounding board" organizations for engineers in industry when such an organization is desired by a particular group.

Serious consideration is being given now by several state societies or chapters and various local "sounding board" organizations to a closer form of relationship along formal lines. Such relationships are primarily within the jurisdiction of the state or chapter units of NSPE, subject to the limitations of the NSPE Constitution and Bylaws. It has been indicated to the Subcommittee, however, that an affirmative stand by the National Society would be helpful by making it clear that it is our desire to bring the members of the "sounding board" group into the family of the professional society. Care has been taken in drafting the proposed policy not to violate local autonomy and to recognize the paramount control of the national, state and chapter constitutions.

ATTACHMENT 1
POLICY STATEMENT
ENGINEERING TITLES

The progress of recent years in professional attitudes and practices on the part of employers and professional engineers can be substantially speeded and improved by recognizing and treating the problem of engineering titles.

Experience in such matters as labor cases, administrative rulings, classification systems and others has shown repeated examples of the conferring of engineering titles upon individuals or groups who are not qualified professionally by any acceptable standards of law or engineering practices. Both employers and employees have been parties to the indiscriminate use of engineering titles. Engineering

titles or designations have been accorded employees who may be associated with an engineering department or activity, but who are clearly not engineers in a professional sense. These have been accorded through position classification systems, organizational charts, advertisements, promotional literature, articles, speeches, company bulletins, payroll records, etc.

It is believed that new and further definitions are not necessary. Adequate standards now exist through accepted definitions of laws, as well as accredited collegiate curricula. To make substantial progress in this area it is suggested that employers and the profession should now move toward the acceptance of guidelines by which the term, "engineer," will be recognized in a proper manner.

For the reasons stated, and recognizing that mutual employer-employee professional relations will be furthered thereby, the following standards are suggested as the only basis on which any title or designation should include an engineering reference:

1. Registration as a professional engineer or engineer-in-training under a state engineering registration law.

2. Graduation from an accredited engineering curriculum leading to a bachelor's degree.

3. An official ruling designating an individual or a group in an engineering capacity as meeting the definition of "professional employee" under the Taft-Hartley Act, or the Fair Labor Standards Act.

All persons not coming within one of these categories should be designated by an appropriate title without reference to "engineer" or "professional engineer."

This policy shall not be construed to prohibit titles such as engineering assistant or engineering aide where the title clearly implies that the position is of a subprofessional nature.

ATTACHMENT 2
STATEMENT

The Engineers-in-Industry Subcommittee proposes the following action:

That NSPE recommends to its state societies that they encourage sounding board organizations* in their areas to become functional groups or sections in local chapters of the professional engineering society, consistent with local, state and National Society constitutions. These functional groups or sections may include members who are not registered, but these members shall have no vote in the local, state, or National Society activities except as allowed in the local or state constitutions.

*(As presently constituted and as used herein, a sounding board organization is defined as a non-bargaining association of engineers, including those in management, employed by one industrial concern, whose purpose is to improve communications between professional engineering employees and management by serving as an objective fact-finding body, and whose activities are carried out in accordance with the professional concepts of NSPE.)

Board Action: Recommendations Approved

ENGINEERS-IN-EMPLOY-OF-PRIVATE-PRACTITIONERS SUBCOMMITTEE

The Subcommittee submits herewith an information report concerning plans. Action is not requested of the Board.

A meeting of the Subcommittee was held in Dallas, Texas, on June 7, 1957, at the time of the NSPE annual meeting to plan the Subcommittee's activities for the year.

Survey

With the publication of the Survey Report—Engineers Employed by Private Practitioners, the Subcommittee's responsibility will be to analyze the results of the survey. Studies will be made to determine if the survey is serving its intended purpose, desirable modifications and suggested areas of further work.

Study will be made to determine desirable frequency for conducting the survey to prepare recommendations to the Board of Directors.

Mailing List of Consulting Engineers

At the time the survey questionnaire was sent out for the Survey Report, it was found that the headquarters' mailing list of consulting engineering firms was incomplete.

If future survey reports are to have increasing value, a complete mailing list is mandatory. The Subcommittee will endeavor to compile an up-to-date mailing list of consulting engineering firms during this year.

Board Action: Report Accepted

INTERPROFESSIONAL RELATIONS

The principal work of this Committee continues to be a cooperative effort with the American Institute of Architects to complete and produce the four Standard Forms of Agreement between engineers and architects, and the Interprofessional Code of Practice.

A great deal of progress has been made since the last report, and it appears now that all documents can be completed and approved for final adoption early in 1958.

There has been no meetings of the Committee. All necessary interchange of information has been by mail. The chairman has made two visits to Washington since the last Board meeting—one on July 12 to consult with the staff and the other on August 16 to meet with the Joint AIA-ASCE Interprofessional Relations Committee.

The American Society of Civil Engineers has taken much interest in these documents through the Joint AIA-ASCE Interprofessional Relations Committee. The AIA portion of this Committee is the same as that which functions jointly with NSPE Interprofessional Relations Committee. While an attempt has been made to create a three-way joint committee, it has been unsuccessful up to the present.

The first joint effort was made when the chairman of our Committee was invited to attend a meeting of the Joint AIA-ASCE Committee on August 16 at AIA headquarters in Washington. The purpose was to discuss and perfect final drafts.

Interprofessional Code of Practice: It was learned earlier in the year that the Interprofessional Code had been revived by the AIA-ASCE Committee although both organizations had originally opposed it.

It was learned at the August 16 meeting that the Joint AIA-ASCE Committee had adopted the Code as originally proposed by the Joint NSPE-AIA Committee in 1955 except (1) the word "principles" was substituted for "code" in the title, and (2) Section VI was consolidated and reworded.

The ASCE Board of Directors approved it at their 1957 spring meeting in Jackson, Mississippi. The AIA Board has taken no action but it will be recommended for approval at their 1957 fall meeting.

The procedures followed have caused some delay and confusion in the prompt implementation of the project. However, it may very well be the means of accomplishing the desired results both in the adoption of a code and in emphasizing the need for better inter-society cooperation.

Therefore, it is recommended to the Board that the Interprofessional Principles of Practice be approved. The original form was approved at the Memphis meeting in October, 1955, and rescinding of that action must be included, if new action is taken.

Forms of Agreement: The four Forms of Agreement were again studied at the August 16 meeting. A number of changes were agreed upon and submitted to the Committee of Office Practices of AIA which is responsible for final editing.

There is now general agreement between AIA, NSPE and ASCE on the forms. There remains only the preparation of final drafts. The Committee of Office Practices has been requested to prepare drafts of the two forms where the architect is the principal in time for submission to the Boards of Directors of the three organizations at their fall meetings.

In order to implement final adoption of these forms AIA and ASCE Committees will recommend to their boards of directors that they refer final decisions on the forms to an appropriate committee which can meet jointly with the committees of the other societies involved before the end of 1957 to complete the forms for final approval at the spring meetings of the three boards.

It was also agreed that NSPE would edit the two forms where the engineer is the principal so that they will conform with those prepared by AIA.

It is therefore recommended to the Board that they approve the new forms of these documents in general and that the Interprofessional Relations Committee be instructed to proceed to work jointly with AIA and ASCE and, if possible, submit final drafts of the forms for approval at the spring Board meeting.

The original forms were approved at the Memphis meeting in 1955 and rescinding of that action must be included if new action is taken.

Conclusion: It is believed that this project can be completed by the time of the spring Board meeting in February. It is extremely difficult to secure complete agreement as to detail on forms such as those being developed. Since they serve primarily as a guide, it is felt best by the Committee that there be some compromise so that they can be put into actual use as soon as possible with the thought that they can best be improved at a later date through usage.

The Committee has learned through its work on this project that it can function best as a liaison between all interested groups both inside NSPE (such as the Functional Section on Engineers in Private Practice) and outside (such as ASCE and AIA) for the ultimate accomplishment of the objective.

Board Action: Recommendations Approved

(*Continued on page 43*)

At Dayton . . .

Spotlight on the Engineer in Industry

By

WAYNE E. AULT, P.E.

Chairman, NSPE Engineers-in-Industry Subcommittee

THE Society is now at a major turning point in its extensive program of service to the largest element of the profession—engineers in industry. In the past several years we have concentrated on research of the problems and from this work developed such detailed and documented studies and recommendations as *A Professional Look at the Engineer in Industry*, *Criteria for Professional Employment of Engineers*, the monthly *Engineering Employment Practices Newsletter*, various policy statements and other items of information.

Now we must put this wealth of knowledge and information to practical use for the purpose of advancing the interests of the engineers and the industrial firms they serve. One of the most effective means of doing this is through state or chapter sponsorship of engineer-management conferences. The Subcommittee has issued an *Engineering Employment Practices Conference Kit* to aid in the formulation and planning of such joint meetings.

In September, the Ohio Society of Professional Engineers conducted a conference at Dayton which, judging from the comments of those in attendance, confirmed the wisdom of the suggested approach. This was a two-day affair divided between a program for management representatives and employed engineers, although both groups were invited to attend all sessions. Other state societies, however, have found a one-day conference adequate. The Texas Society of Professional Engineers held a one-day meeting last year and it was so successful that a similar gathering and discussion is scheduled for this fall.

A regular meeting of the Subcommittee was held before, between and after sessions of the Ohio Conference and this permitted us to attend the Conference as well as conduct the Subcommittee business. A part of the Subcommittee meeting was devoted to a review of the Ohio Conference so the other state societies could be advised of suggestions for their similar programs. A copy of the Ohio program is being sent to all state societies, with some tips from the Subcommittee to make their conferences as fruitful as possible.

Space does not allow a complete report of the many significant and helpful discussions at Dayton, but it was noted that each topic dealt with a practical aspect of industrial engineering employment. James H. Hallett of Du Pont talked, for example, about that company's program for advancing engineers who stay with technical work. Winston Oberg of Esso Research discussed the methods whereby young engineers can develop their greatest potential talent. Other examples were a description of the Detroit Industry Engineering Training Program by Max W. Johnson of Chrysler, testing and developing creative ability by Martin J. Caserio of A. C. Spark Plug, and engineering personnel management by Martin J. Cavanaugh of Delco Remy.

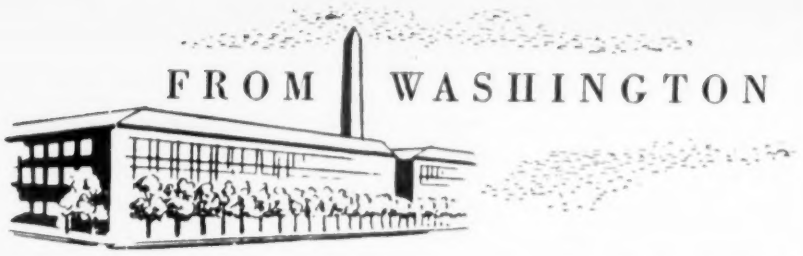
At the close of the first day's session a dinner was held at the beautiful Dayton Engineers Club, with NSPE Vice President Hindermann

(*Continued on page 47*)

Mr. Lunch . . .

Mr. Ault . . .

Mr. Kennedy . . .



By
Milton F. Lunch,
N.S.P.E.'s Legislative Analyst

PRESIDENT TO ASSURE NATION ON SCIENTIFIC PROGRESS

THE most important "personality" in the next session of Congress will unquestionably be "Mr. Sputnik." Nothing in recent years has so shaken official Washington and overnight changed the outlook in terms of taxes, budgets, defense policy, and other subjects of the utmost importance as the launching of the Russian earth satellite. Likewise, the picture for legislation directly affecting engineers and scientists has been turned upside down. The only thing that is certain is that hardly a day will go by in the next session which will not involve some Congressional statements or proposals bearing on the education, training, utilization and numbers of engineers and scientists.

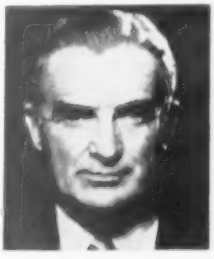
If there were any lingering doubts that engineers and scientists were the central figures in the technologically-dominated "cold war," that doubt has been removed.

Since October 4, when Sputnik flew into the scene, the top-level proposals and suggestions have been so numerous and varied that it is impossible to put them into proper perspective. Probably some order of possible courses of U. S. action in the engineering-scientific manpower and organizational fields will emerge after President Eisenhower's series of talks to the nation on why the American people should have confidence in the country's scientific progress, prosperity and defense program. The implication of the Presidential announcement that such talks will be given soon is necessarily that public confidence has been shaken. The President said that "if I may be able in these talks to set out in proper perspective the truth and facts on these matters, no time consumed will be too much, no inconvenience will be too great." It is reported that about six talks will be given, probably in different parts of the country, and they will extend in time into next year. In the Presidential language, the talks will include a discussion of "continuing endeavor of our people in fields of scientific achievement—and methods for attaining even greater achievements . . ."

Meanwhile, there has been much attention to the plan unveiled by Senator Henry M. Jackson of Washington, a member of the Armed Services and Atomic Energy Committees, for a talent development program to obtain greater scientific and technical manpower in NATO nations by financial assistance and other incentives for students and teachers. As the U. S. representative and chairman of the special NATO Parliamentary Committee on Scientific and Technical Personnel, he will propose the plan at the third NATO Parliamentary Conference in Paris on November 11.

◄ Senator Henry M. Jackson of Washington

Senator Stuart Symington of Missouri ►



Senator Jackson said the "genuine crisis" will take years to overcome, but he called for eight "practical" steps immediately to ease the present situation and build for the future. He would establish an Atlantic Community Talent Development Program under NATO sponsorship and financing to produce at least 200 additional doctoral degree holders "in the fields of maximum importance for the defense and economic well-being of the NATO Community." This would operate at a cost of about $2 million annually through fellowship awards of from $500 to $1,200 annually for graduate study and grants of from $1,000 to $2,000 to the university for each student enrolled.

Other aspects of the plan would include an awards program for teachers and students in secondary schools, an increase in the number and variety of summer study institutes in NATO nations, international exchanges of

(Please turn the page)

scientific and technical personnel on a greatly expanded and coordinated scale among NATO nations, additional cooperative training and research projects which particularly lend themselves to international action, operation of a European-wide employment clearing house for scientists and engineers, greater support by private industry to academic institutions by making its engineers and scientists available for teaching assignments in secondary schools and universities and by sponsoring teaching and research institutes, and a vigorous program "to focus public attention on the necessity of remedying the manpower shortage in scientific and technical personnel."

The recent visit of British Prime Minister Harold Macmillan and the conferences with President Eisenhower and other U. S. governmental leaders involved the international aspects of closer cooperation on scientific operations. It is generally expected that out of the meetings will emerge specific plans for a greater pooling of scientific talent and recommendations for Congress to ease some of the information exchange restrictions in the Atomic Energy Act. This may develop into a major controversy in Congress, involving a fresh and complete review of security and secrecy in the technology of defense.

Harold Macmillan
Prime Minister
of Britain

Another leading voice in the defense picture—Senator Stuart Symington of Missouri, former Secretary of the Air Force, demanded a special session of Congress to provide more money and take other action to speed up the missile program. His suggestion has been rejected, but the persistent critic of current defense policy is certain to urge various forms of "crash" action when Congress returns, including legislation "to properly organize American technological talents to overcome the Soviet lead." Senator Symington said he is opposed, however, to the several immediate suggestions which were made to put the missile program under a "czar" or create a new agency to develop the weapons.

Senator Ralph Flanders of Vermont, one of the few Senators with an engineering background (former president of ASME), issued a statement in favor of a reorganization of the missile program and placing it under civilian scientific control. He particularly recommended that the job be given to Dr. James Killian, president of MIT, stating that Killian was a "time-tested organizer of scientists and engineers." Senator Mike Mansfield of Montana, another influential figure in this general area, backed a new agency under civilian control to take over all available scientists and funds.

As might have been expected, there have been a number of demands for urgent action as soon as Congress returns to establish a Federal scholarship program for more engineers and scientists. Undoubtedly, the chances for such a program to be enacted, previously almost nil, have been improved. The NSPE statement on this point, adopted by the Board of Directors at the recent meeting, is contained on page 24 of this issue.

Another major development in this context has been a re-opening of the question of Government policy on basic research. Adding fuel to the fire, during the generalized argument over proposals for an expansion of the basic research program, it was revealed that last August 17 former Defense Secrtary Wilson had issued an order cutting military and research and development funds by ten per cent or more. This news came just when the new Secretary of Defense, Neil H. McElroy, was saying that more emphasis will be put on research and development, and particularly in basic research. McElroy said he believes it highly important to encourage "speculative thinking on the part of high-grade scientists," and that he would support a strong research program, "part of which would be on pretty speculative innovational kinds of research, rather than strictly development."

There are indications that the August 17 cut will be rescinded, in part at least, and that some easing of spending ceilings in the basic research field may be authorized. Some colleges and firms holding Air Force contracts for carrying on basic research have already received notice of cancellations or cut-backs in the program. Over and above this particular incident, however, there will be strong pressures in the next Congress for a major expansion of funds for basic research, and probably a strong drive to greatly enlarge the various programs of the National Science Foundation.

It is difficult for anyone to sort out and evaluate the dozens upon dozens of proposals which have been offered within the general aspects discussed above. Whether the "crash" atmosphere will have died down by the time Congress returns depends on what further technological surprises Russia may spring, and what offsetting display of technological strength the United States may unveil. Perhaps the most level-headed reaction during a hectic October was that in total engineering-scientific skill and know-how the United States is still ahead—but not so far ahead as we had thought.

AS WE GO TO PRESS—Sputnik has blasted loose the long-secret report recommending increased salaries and other benefits for Federally-employed engineers and scientists. It will be reported in detail next month.

Editor's Note—The three condensed papers presented here were given at a conference in conjunction with the recent annual meeting of the National Society of Professional Engineers. The conference on young engineers in education was held simultaneously with conferences devoted to problems of young engineers in government, industry, and private practice. Each session featured leading figures from the engineering field involved.

These papers from the conference on education are the third in a series to be presented by the American Engineer. The December issue will carry extracts from papers presented at the private practice conference.

A Symposium . . .

Professional Development of the Young Engineer in Education

THE ROLE OF THE PROFESSIONAL SOCIETY FOR THE YOUNG ENGINEERING TEACHER

Clark A. Dunn, P.E.
Executive Director, Division of Engineering Research,
Professor of Civil Engineering
Oklahoma State University

WHY YOUNG ENGINEERS DON'T WANT TO TEACH

Robert E. Stiemke, P.E.
Director, School of Engineering
Georgia Institute of Technology

WHAT DOES EDUCATION OFFER TO THE YOUNG ENGINEER?

John C. Calhoun, Jr., P.E.
Dean of Engineering
A&M College of Texas

The Role of the Professional Society for the Young Engineering Teacher

by Clark A. Dunn, P.E.

The Author . . .

Mr. Dunn

Clark A. Dunn, of Stillwater, Oklahoma, vice president of the National Society for a second term for the Southwestern Region, is the executive director of the Division of Engineering Research and a professor of civil engineering at the Oklahoma Institute of Technology, Oklahoma State University. He was born in Stickney, South Dakota, and his educational record includes a B.S. in civil engineering received from the University of Wisconsin, C.E. and M.S. in C.E. degrees from Oklahoma A&M College, and a Ph.D. in civil engineering from Cornell University.

Dr. Dunn was president of the Oklahoma SPE in 1948, and has served on the NSPE Board of Directors. He is a member of the American Society of Civil Engineers, the American Society for Engineering Education, Phi Kappa Phi, Sigma Tau, Chi Epsilon, and various civic groups.

BEFORE considering the "Professional Development of the Young Engineer in Education," we should agree on some of the probable characteristics of these engineers. For the purposes of discussion it is assumed that the young man is married, likes people, has a desire to help them, is interested in a specific technical field, and wants to add to the fund of knowledge in his field.

It is also considered desirable that we agree on primary responsibilities of an individual so that we all start with approximately the same assumptions in discussing "The Role of the Professional Society for the Young Engineering Teacher." The role of the professional society is essentially the same for all young engineers regardless of their field of employment and the young engineering teacher is not a special case. Most of my comments have general application rather than being limited to the young engineering teacher.

The first responsibility of this mythical young man we are discussing is to provide for the basic needs of his family—food, clothing, and shelter. The magnitude of such needs is not a constant based solely on the numerical size of a family but varies with the characteristics of the individual. For the skilled workman blue denim breeches and a jacket may be the basic clothing needs but for the young engineering teacher a reasonably good business suit is required for every-day work. For psychological reasons the basic need of the skilled workman may be a more expensive house than might be required by the young educator. Other variations in basic needs resulting from individual differences will probably be apparent.

The second responsibility of the young man, closely interwoven with the first, is the creation of a family atti-

tude or plan that will enable him to work effectively. The person who finds it necessary to prepare a foundation for later progress will more easily accomplish it if his family understands this need and cooperates in its achievement. Advanced education or the building of a business require periods of denial by a man and his family. A wife's understanding of the future value of present denial to enable her husband to secure an education usually results in greater accomplishment at lower cost. The development as well as the acceptance of a common viewpoint regarding the expenditure of funds and time is a major phase of such a family obligation.

Another primary responsibility is to the spiritual phase of life. The transition in our social order from the era of scarcity to an era of plenty in terms of physical things creates uncertainty and confusion in many people's minds about their objectives. Since the beginning of time, human beings have been forced to devote most of their thought and effort to acquiring physical things essential to life. Today a much smaller per cent of the individual's time is required to satisfy those needs. Thus, an adequate spiritual foundation to stabilize an individual's thinking becomes increasingly important. Church affiliation, with its attendant support, is one of the principal means of giving reality to this spiritual and emotional foundation.

THE next responsibility of this young man is to his specialized field of employment. For the person we are discussing, this means affiliation and participation in the technical society of his field. If, for instance, he is teaching structural engineering subjects, he should identify himself with the American Society of Civil Engineers. This is an important means of aiding his progress and a means of contributing to the progress of his profession.

Closely associated with the young man's responsibility to associate himself with his technical society is that of associating himself with a society or group concerned with the problems and objectives of instruction. The American Society of Engineering Education is one such society.

These responsibilities that have been discussed are, in my opinion, the prerequisites on which the young man in education should build his plans for professional development. Any of these responsibilities can be minimized or ignored, but, in my opinion, efforts to achieve professional status will be correspondingly less effective. Expressed in other terms—I think the individual's professional development must have as its foundation competency in his field of specialization, integrity in his dealings with his fellow man and consideration for the needs of his family.

Another viewpoint that provides a basis for this discussion is found in a paper by Dr. W. E. Wickenden.

> "If one searches the authorities for definitions of a profession he will probably find four kinds. One is likely to hold that the determining quality *is an attitude of mind*, that an altruistic motive can lift any honorable calling to the professional level. A second may say that it is a certain *kind of work*, one requiring special skill on a high intellectual plane. A third may state that it is a *special order in society*, as the bar, the bench or the clergy. Still others insist that no work can be professional without a *confidential relationship* between a client and his agent, as that of patient to physician, litigant to lawyer, etc. None of these definitions is self-sufficient. Taken together, like the legs of a table, they give a profession a stable base of support."

Having established the foundation for professional development and the definition of a profession, let us turn to details of this development. I know of no better way to express the viewpoints essential to this discussion than to again quote Dr. Wickenden.

> "Every calling has its mile of compulsion, its round of tasks and duties, its code of man-to-man relations, which one must traverse day by day if he is to survive. Beyond that lies the mile of *voluntary effort*, where men strive for *special excellence*, seek *self-expression* more than material gain, and give that *unrequited margin of service to the common good which alone can invest work with a wide and enduring significance*. The best fun of life and most of its durable satisfactions lie in this second mile, and it is only here that a calling can attain to the dignity and distinction of a profession."

For the purposes of our discussion, one might say these criteria are the standards which the young man can use to measure his professional growth. Each person in reviewing his progress will be tempted to discount some of these factors. . . .

LET us assume that the activities Dr. Wickenden mentions are typical of a professional man:

(1) Puts forth effort voluntarily; (2) strives for special excellence; (3) seeks self-expression; (4) serves the common good, and (5) recognizes social duties.

If then the professional society has any role in the life of the young engineering teacher it must assist or inspire action on the individual's part in the general areas mentioned above. The first service the professional society performs is the establishment of a culture medium or a climate in which professional attitudes are encouraged. In accepting membership in NSPE each person subscribes to the objectives of that Society, which are expressed as follows:

> "The objectives of the National Society shall be the advancement of the public welfare and the promotion of professional, social and economic interests of the professional engineer."

It is not to be inferred that each individual who accepts membership in NSPE becomes immediately endowed with all the characteristics of a professional person, nor is it assumed that nonmembers lack such qualities. It is logical to believe that the association of an individual with people of like viewpoints in the professional society increases his interest and determination to improve his professional qualities. There is no magic in the membership in any organization that changes people; there can be magic in the conviction of an individual as he adopts the ideas af those with whom he associates.

The professional society plays a minor role in its contribution to the individual's "striving for special excellence," in his technical field. The assistance and inspiration should come from his association with a technical group. This is an important function of the person's association with people in his field of specialization. Inspiration of individuals in other fields who also "seek special excellence" cannot be discounted and some of this inspiration will result from association in the professional society. The professional society offers the young engineering teacher many opportunities for "self-expression." In many cases he will find a local chapter of the professional society in his city. Here he may seek and find many opportunities to present his ideas on subjects of a professional nature.

It is obvious that similar opportunities could be available in his state society. One of the fourteen standing committees of NSPE is the Young Engineers Committee which can and should have its counterparts in state and local chapters. If they do not exist he has the opportunity to help organize them. An organizational method has now been formulated for the functional group of the young engineers as compared with the Young Engineers Com-

mittee. Advantage of the functional group is that the young engineers can select their own officers and plan their own activities.

Another opportunity for "self-expression" is found in the publications of the national, state and local groups. Opportunities to "serve the common good" and to discharge "social duties" are offered by the activities of all levels of the professional society. . . .

PROBABLY most individuals who attain a worthy goal combine a tenacity of purpose that enables them to conquer the day-to-day obstacles and requirements with a firm conviction that the rewards will be adequate compensation. As indicated earlier, the major change through which we are passing in our social order from scarcity to plenty (of material things) lends ever-increasing importance to the non-material possessions as a means of attaining living satisfaction. . . .

The role of the professional society for the young engineering teacher is essentially the same as for other young engineers.

Prerequisites for professional development of the young engineering teacher are competency in his field of specialization, integrity in his dealings with his fellow man, and consideration for the needs of his family.

Professional development is accomplished by (1) voluntary effort in technical and cultural activity; (2) striving for special excellence; (3) seeking self-expression; (4) serving the common good, and (5) acceptance of social obligations.

The professional society offers the inspiration of associates having like objectives, organized effort to serve the common good, opportunity for self-expression and the discharging of social obligations.

The rewards for professional status are the lasting satisfaction of noteworthy achievement. Derived from such achievement will come suitable financial rewards and recognition from one's colleagues.—***End.***

Why Young Engineers Don't Want to Teach

by Robert E. Stiemke, P.E.

The Author . . .

Mr. Stiemke

Robert E. Stiemke, director of the School of Civil Engineering, Georgia Institute of Technology, has been an engineer since he was twenty-one years old. Born in Milwaukee in 1915, he received a bachelor's degree in civil engineering from the University of Wisconsin in 1936, and a master's degree four years later. Mr. Stiemke served with the Army Corps of Engineers from 1936 to 1939, and with U. S. Public Health Service from 1941 to 1946. He was an instructor at Wayne University, 1940-42; an associate professor of sanitary engineering at North Carolina State College, 1942-47; and a professor of sanitary engineering at Pennsylvania State College from 1947 to 1950, when he assumed his present position.

Mr. Stiemke is past president of the Georgia Engineering Society; president of the Atlanta Post, Society of American Military Engineers; national director of the Federation of Sewage and Industrial Wastes Associations; director of the American Sanitary Engineering Inter-Society Board, and a member of the Georgia SPE.

LET'S go back to a time about twenty or twenty-five years ago when some of us were in college and look briefly at the profession of engineering teaching at that time. College teaching was the contemplative life. This was true for those teaching engineering as well as for those teaching the liberal subjects. There seemed to be time—time for thought, study, and meditation; time for enjoying one's job, one's associates and one's students. There was time for the professor to enjoy his family, time for travel, time for long vacation periods during the summer months, and shorter ones at Christmas and in the spring. There was time for tending to the responsibilities of professional life.

Two decades or so ago, the engineering college teacher who had reached the rank of full professor, appeared to have enough income from his job for a comfortable living, for the education of his children at least to the level of his own, and for the travel that his vacation periods allowed. It is true that the beginning instructor at that time received a starting salary of only $1,200 to $1,800 per year. But this compared favorably with starting salaries of engineering graduates in engineering offices or on construction. I remember clearly a specific case of one full professor whose salary at that time for the academic year was $6,500. He had time for some consulting work which provided additional income. His situation appeared ideal to me then. In fact, I felt if I could some day reach the financial level that he had attained, I would be perfectly satisfied.

Twenty-five years ago there were few engineers who had doctor's degrees. A master's degree was considered adequate to enter the engineering teaching profession and to progress in it.

Many things have happened during the last twenty or twenty-five years to change the picture completely in engineering teaching, at least on the campuses of our larger engineering schools. The contemplative life has given way to rushing, driving, intensive activity that makes life in industry far more appealing, particularly to the young engineer. . . .

How does the active, valuable engineering teacher spend his time? His primary duty, of course, is undergraduate teaching. His teaching load may be measured in several ways. Ordinarily he has about twelve credit hours of teaching per week. A credit hour is normally one one-hour lecture or one three-hour laboratory period. In most schools there is a rule of thumb which provides two hours of preparation per credit hour of class, including the grading of papers, a chore which most engineering teachers recognize of great importance though burdening and wearisome.

ANY practicing engineer today will recognize instantly that engineering courses cannot be static. The science and art of our profession are advancing so rapidly that it takes much time for any of us to keep even partially informed on what is going on. Therefore, in order for the engineering teacher to keep up-to-date, he must find time for reading and outside study.

We can all remember times when, as students, we found it necessary to visit the office of a professor for additional help of one sort or another. Individual students think they take little time from their professors outside of the regular class periods. But when the time spent by each student for personal conferences is multiplied by one hundred or more, which would represent the total number of students each professor might have in classes during any term, this becomes a time-consuming part of his job.

There are many other outside school activities which deserve and demand the time of the professors. Also, in engi-

(Continued on page 46)

N.S.P.E. Believes

THERE IS A DIFFERENCE

BY PAUL H. ROBBINS, P.E.

Executive Director

N.S.P.E.

THE comments on the opposite page, which appeared in the September, 1957, issue of the *Engineers' Outlook*, the publication of the American Federation of Technical Engineers, AFL-CIO, indicate one or two of the philosophies which put NSPE and those who believe unions good for engineers on opposite sides of any discussion concerning the welfare of the profession. Essentially, what is said now by the AFTE spokesman is not different from the essence of the remark by the late Matthew Woll, long-time vice president of the AFL, more than twenty-five years ago:

> "The trouble with you engineers is that you fancy yourselves as professional men. Actually, you are just hired help."

It is unfortunate that an organization with the word "engineers" in its name, even one composed primarily of technicians, as is the AFTE, should decry the desire of professional engineers to improve their "status." NSPE certainly endorses and welcomes the types of examples cited, such as attendance at professional society meetings, additional education and the establishment of professional standards. In connection with the latter example, NSPE has published and distributed widely the *Criteria for Professional Employment of Engineers*, emphasizing the co-equal responsibility of the employer and the engineer to meet their obligations for improved service by the engineer and improved action by the employer to enhance the status of the true professional.

One item in this article should be refuted at the outset. NSPE's activities receive no "financial assistance from management." NSPE has always believed that professional activities will be only as effective as they are supported by individual members of the profession. That is why it is an individual, dues-paying membership organization. Ninety-five per cent of its funds come from individual dues; the remaining five per cent come from sale of its publications, and a modest income from advertising in its magazine.

The most fundamental point of difference in NSPE philosophy and that expressed opposite is that of definition. One of the greatest problems facing the professional is to distinguish between those who have qualifications which class them as a part of the profession and those who have a product or service to sell and label it as engineering to give it more prestige.

Many of the professional problems of engineers would be solved in large part if employers and the public would understand clearly that "engineer" and "technician" are not the same thing; that "engineer" in a proper sense means one who has established his qualifications for professional classification and recognition. It is this confusion of terms, not always inadvertent, which misleads many into believing that engineers have joined unions in large numbers. The action of the NSPE Board in adopting the policy statement on engineering titles, reported elsewhere in this issue, should be of considerable benefit in eliminating this confusion.

The recent survey by the Professional Engineers Conference Board for Industry in cooperation with NSPE bears out the fact that there is a difference between the motivations of professional engineers and those whose work is evaluated by rate of production or other criteria. The number one motivation of engineers is opportunity for creative work. Certainly this motivation does not carry this high priority for those with lesser skills. Personnel people are turning more and more attention to creating the kind of atmosphere where engineers and scientists can be motivated to their highest potentialities. NSPE believes that to attempt to combine these desires with those of other motivations will defeat our most pressing needs; namely, to utilize to the highest degree the engineering brainpower of our nation.

It is this belief which undergirds NSPE's support of the professional provisions of the Taft-Hartley Law. NSPE believes that professional personnel should have the right to determine independently their wishes with respect to the mechanism for handling their relations with their employer. This has zealously been supported in Congressional testimony, court cases, and presentations to engineers, management, and the NLRB.

If engineering is to continue to increase its status as a profession, it must work toward improved distinction of qualifications, higher qualifications and better service and better utilization of the abilities of those so qualified. NSPE believes progressive management agrees its needs for engineering brainpower are best served by the same objectives.—***End.***

Editor's Note—See "NSPE Believes" for comment on this article, which is reprinted from the September 1957 issue of **"Engineers' Outlook,"** *official publication of the American Federation of Technical Engineers, AFL-CIO.*

AFTE Organizing Faces Great Opposition

The National Society of Professional Engineers is continuing its all-out effort to discourage the organization of engineering personnel throughout the country. Of course, all these efforts are done with the financial assistance of management.

Certain concessions are presently being made to create "status" among the engineering groups. There are proposals that the employer pay the engineer's dues in professional societies, that he be paid to attend meetings of the professional societies, that educational leave of absence be granted, that tuition refunds be made for educational and professional leaves of absence and that professional standards be set up. This last provision has been talked about for several years but, as yet, no definite conclusions have been reached.

In line with this reasoning, and yet with an eye to collective bargaining, an independent organization called the Engineers & Scientists of America (ESA) was formed about four years ago. This group had great promise and effectively organized many of the aircraft plants and aircraft component industries throughout the country. At first, it included engineers, designers and draftsmen, and in this way they all gained strength through collective effort.

Last year, however, the propaganda of the National Society of Professional Engineers affected the thinking of this group and they decided to become "super-professionals." This attitude did not meet with the approval of many of the membership and a new association was formed, called the Engineers & Scientists' Guild. This group, though at present independent of all affiliation, is one for us all to watch. The ESG, as it is called, began at Sperry Gyroscope in Long Island and is spreading to other engineering concerns throughout the country. It has not yet affiliated with the AFL-CIO, through the AFTE, but they will soon discover the need of strong bonds with the parent body of the American labor movement.

This group includes engineers, designers and draftsmen and the college degree is superseded by the community of interest necessary for dealing with a large corporation. This community of interest depends primarily on economics and not on any social and educational background of the individual member. The work of the engineer is so closely tied to that of the designer, draftsman and technician, even the student trainee, that it forms a working unit and a natural bargaining unit.

Any thinking on the part of any one of our membership that the position of the engineer is separate and distinct from that of the designer and draftsman is just as damaging as the thinking of the engineer that education and the so-called social status creates a natural economic cleavage. The technical man has a problem and it is the same problem whether he be an engineer or a draftsman. This fact is becoming a reality in many places throughout the country. If necessary, let us re-orient our thinking along similar lines. In this way, we can help break down the barrier that still exists in the United States between the engineer, on the one hand, and the designer and draftsman, on the other.

Armco Offers Scholarships Through NSPE

A $15,000 yearly civil engineering scholarship program under the supervision of the National Society has been established by Armco Drainage & Metal Products.

Approval of the project was given by the NSPE Board of Directors at the fall meeting in Bismarck, N. D.

In accepting the Armco scholarship program, the Board also gave approval to a policy authorizing the National Society to solicit and enter into agreements with associations, corporations, foundations, or individuals desiring to make scholarship and fellowship grants in the engineering field. Funds for the first scholarship program will be made available by the Armco Foundation, Incorporated of Middletown, Ohio.

The program involves the establishment of five $3,000 civil engineering scholarships, to be awarded annually under the supervision of NSPE. Each scholarship will provide a stipend of $750 per year for recipients engaged in a four-year engineering curriculum.

Applicants must have the following qualifications:

1. Actual need for substantial financial aid to attend college.
2. A high school record which at the time of application indicates that the student applying is qualified to handle college work.
3. Graduation from high school during the year of application for a scholarship.
4. A firm decision to enroll in and continue the study of civil engineering at an accredited college or university.

Engineer

(Continued from page 19)

Since it was clear intent of both parties to contract for the rendition of architectural services, and since the plaintiff was not a licensed or registered architect, the Court declared that it "will not lend its aid in support of a contract rendered in violation of a governing statute."

Two other recently-decided California cases, while not involving professional engineers, nevertheless supported the principle that unlicensed persons or firms, who are required by law to be licensed, have no standing in court to sue to recover for services rendered. These two cases denied recovery to construction contractors who had not substantially complied with California statutes which require that such persons or firms be a "duly licensed contractor at all times during the performance of such act or contract."

With Our Members . . .

At Dinner Meeting

Chapter Certificate Presented to New Pasco Chapter of the Washington SPE

Installation of officers and presentation of the chapter certificate to the new Pasco Chapter of the Washington SPE was held at a dinner meeting recently.

The Pasco area is the fifth chapter to be chartered within eighteen months as a new chapter of the Washington Society. This chapter came into being with fifty charter members.

Officers for the new Chapter are: John R. Carrell, president, Richland; George Picatti, vice president, Yakima; Stanley Perry, secretary-treasurer, Pasco; and Eckle S. Bell, trustee to the State Board, Kennewick.

The installation dinner featured an address by James McGivern, dean of engineering, Gonzage University, Spokane, Washington, who talked on the problems and policies of the State Board of Registration for Professional Engineers.

Among the honored guests were Robert H. Lochow, NSPE, national director, Seattle; Walter S. Gordon, WSPE state president, Tacoma; Herbert J. Webb, Spokane Chapter president; Harold F. Sitts, Tacoma Chapter president; Hugh Miller, past president of the Tacoma Chapter; Wilho Williams, state trustee, Spokane; Kendall Wood, past NSPE national director, Spokane; and David M. Lombardo, WSPE executive secretary, Seattle.

. . . more state society news on pages 37, 39, and 41.

Economic Development Of Engineer Discussed

Frank A. Ernst spoke recently to the Richmond Chapter of the Virginia SPE on "The Engineer and Our Economic Development."

Mr. Ernst recently retired as general manager of the Hopewell plant of Nitrogen Division Allied Chemical and Dye Corporation.

Florida Society Names Donahue Ex. Director

Frederick J. Donahue, Jr., of Washington, D. C., has recently been named executive director of the Florida Engineering Society.

F. J. Donahue, Jr.

He received his A.B. in social sciences in 1949 from Stanford University. He has continued graduate work in industrial management and public relations at The American University, Washington, D. C.

Members of Pasco Chapter

Receive Chapter Certificate

Above: Shown are members of the new Pasco Chapter of the Washington SPE at a recent dinner meeting. Left: Presentation of the chapter certificate took place at the affair. From left to right in the photo are: George Picatti, vice president, Pasco Chapter; John R. Carrell, president, Pasco Chapter; Walter S. Gordon, WSPE president, making the charter presentation; Herbert J. Webb, president, Spokane Chapter, and Robert H. Lochow, NSPE national director.

"Engineer of the Year" Award to Patrick Corry

Patrick M. Corry was given the 1957 award of "Engineer of the Year" by the New York State SPE at their annual meeting.

A partner in the architectural firm of Warren & Wetmore, Mr. Corry was the recipient of the award for the second time. He shared the first annual award in 1951 with Ernest Fox.

The award was presented by Dr. D. B. Steinman, past NSPE president, who said:

"He has had a long and distinguished career, making both civil and military constributions, as a construction engineer, as a structural engineer, and as an architectural engineer."

Mr. Corry was one of the founders and directors of the NYSSPE. He assumed the post of treasurer in 1926 and has been reelected annually to that position.

William F. Steuber, Jr. Writes Second Novel

William F. Steuber, Jr., a member of the Southwest Chapter of the Wisconsin SPE, recently saw publication of his second novel.

The title of Mr. Steuber's book is *The Landlooker*, and is called by the publishers "a great novel . . . a beautiful book . . . with a vital setting." From beginning to end, the book is built on Wisconsin history as it tells of the adventures of Emil Rohland and his brother Rudolph, sons of a prosperous Chicago harnessmaker, seeking new markets for the family wares.

Mr. Steuber, who is employed as chief of public information for the State Highway Commission during the business day, said he does most of his research and writing in the evenings and weekends.

W. F. Steuber, Jr.

State Representative Talks to Penna. Chapter

The Beaver County Chapter of the Pennsylvania SPE held their October meeting at the Penn-Beaver Hotel. The second in a series of talks on the "Professional Engineers Responsibilities" was presented by the State Representative from the second district, Attorney Charles D. Stone. Mr. Stone's topic was "The Legal Responsibility of the Professional Engineer."

Directors and all committee chairman met prior to the regular meeting.

Topeka Chapter Meets

The first meeting of the 1957-1958 season of the Topeka Chapter of the Kansas Engineering Society was held in September. At this meeting a group of sixteen new members were presented NSPE emblems. This large group of new members is due to the start of a state-wide drive for members in Kansas. Dwight Brown, secretary for the Association of Architects formed by the Locke Architects to advise Topeka's Urban Renewal Agency on general planning discussed, "The Current Status of Topeka's Urban Renewal Project."

By Mrs. Harry G. Kennedy, Chairman of the Ladies Auxiliary Advisory Committee.

"The frost is on the pumpkin, the fodder's in the shock . . ." and the fall activities of the wives of engineers are in full swing. From all directions come programs full of enthusiasm, information and fun.

Mrs. J. Roy Black, chairman of the Publicity and Public Relations Committee of the Oklahoma State Auxiliary, writes that their annual scholarship of $200 was awarded this year to Charles Eilis, a junior in the School of Engineering, Oklahoma State University.

The Auxiliary to the Central Oklahoma Chapter also presented a $200 scholarship to Joseph B. Rathfon who plans to enter the engineering field. The Auxiliary to the Northwest Chapter (Oklahoma) secured a slide rule for an Enid High School girl who is entering engineering school. The Oklahoma auxiliaries, realizing the importance of young people going into the engineering fields, are trying to stimulate interest at the high school level.

Mrs. Thomas P. Grimball, Jr., the newly elected president of the Piedmont Auxiliary of the South Carolina SPE, sent a most attractive year book, using the suggested auxiliary insignia on the cover. The book lists not only auxiliary officers but chapter and state officers, meeting time and place as well.

The Auxiliary to the Western Chapter of the Missouri SPE has built its year's programs around a monthly luncheon preceded by a business meeting and followed by a program. After four meetings they boast of a roster of eighty-two members.

The first meeting of the fall season for the Topeka Auxiliary of the Kansas SPE was a luncheon with

(*Continued on page 41*)

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Restricted to Registered Professional Engineers . . . Directory Continued on Next Page

Bergen County Chapter Adopts JETS Program

The Bergen County Chapter of the New Jersey SPE has adopted the sponsorship of the JETS Program (Junior Engineering Training for Schools) for county secondary schools. Much of the programing and leadership is provided by JETS headquarters at Michigan State University.

The chief purpose is to alert high school students to opportunities in the engineering profession and the prerequisites for admission to engineering colleges early enough to properly prepare.

A lack of interest in sciences and mathematics has been noted in high school students. This could provide a serious deficiency to a senior who may decide too late to pursue an engineering career. The chapter's procedure is three-fold . . .

1. Introduce the JETS idea to the high school science department and students, and let them decide whether or not to participate.

2. If interest is shown and a club formed, a professional engineer advisor is appointed in addition to a faculty counsellor.

3. Once a club is formed, the Chapter attempts to answer questions, provide specialized engineers, obtain admission to industries, arrange tours, obtain literature, and in general promote and maintain interest in engineering.

Steuben Area Chapter Holds First Meeting

The Steuben Area Chapter of the New York State SPE met at the Baron Steuben Hotel in Corning, New York, in October for their first official meeting of the year 1957-58.

President Charles W. Maher presided. Zone Director H. Alfred Hendrich attended the meeting.

The highlight of the meeting was a talk by Dr. W. W. Shaver, manager, Atomic Engineering Department, Research and Development Division, Corning Glass Works, on the subject "The Wonders of Pyroceram." This was an excellent introduction to the important properties of a new material destined to play an extremely important part in future requirements in materials of construction.

The next meeting of the Chapter is scheduled for November 12 at the Hotel Sherwood in Hornell, New York.

C. F. Savage Speaks to North Shore Chapter

The opening of the 1957-1958 season of the North Shore Chapter of the Massachusetts SPE was a joint dinner meeting with the Lynn Section, American Institute of Electrical Engineers, and the Lynn (River Works) General Electric Engineers Council.

Charles F. Savage, engineering professional relations consultant for the General Electric Company, spoke on "Engineering Union Strategy." Mr. Savage discussed the union approach to this problem and touched on the recently announced AIEE proposal which concerns support of NSPE for better unity in the engineering profession.

Cornell Aero Lab Hosts Erie County Chapter

The September meeting of the Erie County Chapter of the New York State SPE was well attended as Cornell Aeronautical Laboratory was host to 165 members and friends for a dinner meeting and a guided tour of the famous research laboratory, including a visit to the very large wind tunnel.

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Auxiliaries

(*Continued from page 37*)

Mrs. Dorothy Paul, manager of Moore's Book Store, as guest speaker. She reviewed ten current best sellers and gave thumb print sketches of the authors. Name tags are to be used for the rest of the meetings because, after just one year of organization, they have seventy-one active members.

The Auxiliary to the Franklin County Chapter of the Ohio SPE were guests at the Governor's Mansion in September for a membership tea. Members, prospective members and guests of the Auxiliary were received by Mrs. C. William O'Neill, wife of the governor of Ohio, and Mrs. Charles E. Busch, president of the Auxiliary. Past presidents of the Auxiliary served as hostesses for the meeting. They included Mrs. C. E. Bischoff, Mrs. G. W. Alsdorf, Mrs. E. H. Stork, Mrs. C. K. Rose, and Mrs. G. D. Shisler.

The auxiliaries can give a very valuable assistance to the chapters in helping with plans for "Engineer's Week" in February. Service on publicity committees and decorations committees are just two of the many responsibilities wives can shoulder.

Lorain County Chapter Opens Program

The Lorain County Chapter of the Ohio SPE held a steak dinner in September to start off the year's program.

On hand to lend some expert advice for making the Lorain Chapter a leading influence in the State were: A. H. Samborn, NSPE national director; E. S. Barrett, president of the Ohio Society, and Lloyd A. Chacey, executive secretary of the Ohio Society.

The Chapter has formally and enthusiastically approved and accepted the Black River Council Girl Scout camp development as a five year project. Surveying the plot at Green Road, just over the Lorain-Erie County line, was started last spring and will be completed this fall. David S. Ross, a chapter member and chairman of the Development Committee, will see that each phase of planning and construction will be aided by local professional engineers. Some of the various projects which professional engineers will be assigned are: construction of a dam and development of a lake; construction of a water purification plant and sewage disposal; construction of buildings, camp sites and roads; power and telephone facilities; etc.

Mr. McGinnis, director of the Lorain County Planning Commission, was present to obtain engineers to speak at various civic organizations for the support of the coming one-fourth mill levy.

At Cleveland Quarries, South Amherst, which quarry the famous Amherst Sandstone, the Chapter toured one of the centenarian industries in Lorain County at the October meeting. "Sandstone is no longer limited to architectural and the familiar grinding wheel, but new products have been developed from sandstone for use in refractories for the iron and steel industry and highway construction," according to Stanley Young, ceramic engineer of Cleveland quarries and chapter member. Mr. Young spoke at a dinner at Oberlin Inn about the products, company history, and the geological history of the formation of the Amherst sandstone strata. P. A. Mori, executive vice president, was present to answer questions about the company operations.

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Meeting

(*Continued from page 27*)

IMPROVED PROFESSIONAL ACTIVITIES

At the annual meeting of the Society in June, 1957, the Committee on Inter-Society Relations submitted a report commenting favorably on the plan proposed by the American Institute of Electrical Engineers which would divide engineering activities into three fields and assign the technological to Engineers Joint Council, the educational to Engineers Council For Professional Development and the professional to NSPE. (See June issue AMERICAN ENGINEER).

The Inter-Society Relations Committee report recommended that NSPE (1) re-examine its admission requirements so as to expand its membership and (2) consider again joining EJC.

What Is NSPE Doing? Read These National Committee Reports.

Your Board assigned the task of studying this report, to our Committee. After careful study this Committee offers the following interim statement and recommendations:

(1) As it has in the past, NSPE continues to favor unity of the engineering profession.

(2) NSPE will continue to cooperate with other groups to attain that goal.

(3) The American Institute of Electrical Engineers is to be highly commended on the development of an interim plan leading toward unity.

(4) The president of American Society of Mechanical Engineers is highly commended on his support of the AIEE plan.

(5) The problem of unity and its solution is so broad that this Committee believes that it should be discussed and debated by NSPE members and in fact by all other engineering societies at every level of organization.

(6) We recommend the publishing of articles and editorials containing the best thinking on the matter in the AMERICAN ENGINEER.

(7) We recommend the preparation of a booklet, which will present the issues, and its distribution to NSPE member state societies and local chapters as well as all other engineering societies who are interested.

(8) Your Committee continues active study of all ramifications of the AIEE plan and solicits the views of all members and non-members.

(9) Later in the year the Committee proposes to circularize a questionnaire to all the member state societies seeking their views on the issues as a guide to development of future recommendations to this Board.

(10) The rapidly changing status of Engineers Joint Council makes it appear that we should re-open our study of the advisability of NSPE joining it. This will be done in the next few months.

Board Action: Recommendations Approved

MEMBERSHIP

In the membership year completed July 1, 1957, your National Society enjoyed a net increase in membership of over 4,000. This figure represents the largest increase in the recent history of the Society, and was almost fifty per cent higher than the rate of increase in the immediate preceding years. The Membership Committee, however, is not satisfied with this rate of growth. The total membership of our National Society is currently approximately 42,000 which still represents only about eighteen per cent of all registered engineers in the United States; the gain last year accounted for only a scant three per cent of all engineers registered in the United States, and therefore, eligible to enjoy the advantages of membership in our Society. The Membership Committee still feels strongly that the surest way to provide answers to the many complex problems which our Society faces is to set in motion the kind of program that would send our membership "sky rocketing" to such a level that we can truly represent the majority of all registered engineers.

Suggested Program for 1957-1958

Experience through the years has shown that membership growth does not result solely from a program; any important change in the rate of growth of our Society must come as a result of vigorous and enthusiastic activity at the local chapter level. Thus, any program for membership promotion at the National level must consist of suggestions for organization of a local campaign, stimulating enthusiasm in local level and getting promotional material into the hands of local membership committees. The Membership Committee offers the following program which we hope will be followed by as many as possible states and chapters throughout the country. This general plan was outlined in a memorandum sent to state presidents and membership chairmen.

(1) That every state president initiate one or more meetings throughout his state, bringing together every chapter membership chairman in a meeting reviewing again the many accomplishments of NSPE and advantages of membership. At the same meeting, membership promotion materials, which are available from the National Society, would be reviewed. Chairmen attending this meeting would, of course, be urged to later undertake the same kind of organization and training meeting with his own local membership committee.

(2) The "Membership Memo," which is now distributed monthly to chapter presidents and secretaries, includes data on how to organize a membership campaign at the local level, as well as suggestions regarding proven techniques for successful personal contacts and useful membership promotion material. We are distributing this piece monthly in such quantities that it will be available to most of the local membership committee members.

(3) We are planning to distribute again copies of the membership "kits" which contain a wealth of information about the organization of the membership program and many of the promotion pieces which have been prepared in past years and which have been proven to be effective. Here again this distribution will be planned to get the material into the hands of membership chairmen and workers in every local chapter.

(4) An individual mailing campaign will be undertaken again this year in five states; namely, South Dakota, portions of California, West Virginia, Georgia and Rhode Island. Due to limitations in funds, this program is not as extensive as we had hoped would be possible; but it is already underway, and we are hopeful that the results will be equally as encouraging as those of last year.

Refunds Based on Last Year's Membership Gains

More than $10,000 will be distributed at this fall meeting to member state societies all over the United States, based on gains in membership which they experienced last year. You will all recall that the purpose of these refunds was to place funds in the hands of the local chapters which could be used specifically for the promotion of membership at the local chapter level. We are confident that if this money is so used, it will be most helpful in swelling the total membership growth of our Society during the coming year.

Delinquency

The number of new members added to our Society during the membership year ending July 1, 1957, was actually 5,061. Our net growth, however, was only 1,062. The difference representing losses in members due to delinquency, members who felt that the advantages of membership would not justify the cost. This problem of course is not peculiar to our Society alone; but if we are to maintain continued growth, it must be one to which we must continually apply our best efforts. There have been many suggested ways of dealing with the problem in the past; a successful treatment of the problem will vary with the individual cases. One state society is this year instituting a program whereby a personal interview is held with every member who resigns, to try to determine with him his reason for letting his membership lapse. It is undoubtedly a step in the right direction, and it might be well to consider it along with the many other suggestions of similar nature reported from time to time in the "Membership Memo."

Conclusion

The Membership Committee does not seek formal approval of the above program; it is similar in every respect to the program which was in operation last year. Although the Committee is disappointed with the funds allotted to this important work of the Society, we are quite certain that, however limited the funds, a successful year can be ahead of us if every chapter throughout the country will develop and pursue enthusiastically some kind of program. We are convinced that the nature of the program is not as important as the fact that there is a program, and that it is followed with vigor and enthusiasm. As usual, we make our appeal to the members of this Board of Directors for their invaluable assistance in helping to create in their home state and chapter the

(*Continued on page 45*)

STRICTLY BUSINESS

Personalities . . . **Paul G. See** has joined the staff of the **Randolph Engineering Corporation,** Los Angeles, Calif. . . . The appointment of **Colonel Charles T. Tench** as vice president of **Palmer and Baker, Inc.,** in charge of the company's Louisiana and Texas operations, has been announced by **Wayne Palmer,** president . . . Five engineers have been named to the senior technical staff of **Control Data Corporation,** Minneapolis, Minn., **Frank C. Mullaney,** director of engineering, has announced. The five are **William R. Keye,** associate director of engineering; **Robert N. Kisch; Robert L. Perkins; Howard Shekels,** and **Seymour R. Cray** . . . **Lawrence Fay** has been promoted from product design engineer to chief engineer of the **Elgin Metalformers Corporation,** Elgin, Ill. . . . **Lamson Corporation,** Syracuse, N. Y., announces the appointment of **Robert C. Long** as New York regional manager . . . **Harold S. Goldberg** has joined **Consolidated Avionics Corporation,** Westbury, L. I., N. Y., as chief development engineer, it has been announced by **Harry Glixon, Avionics** president . . . **William F. Lotz, Jr.,** a member of the construction firm of **William F. Lotz, Inc.,** Philadelphia, Pa., has been appointed to the **Construction Industry Advisory Board** by **William L. Batt, Jr.,** Secretary of Labor and Industry of the Commonwealth of Pennsylvania.

Mr. See

The appointment of **Stuart T. Schy** as technical engineer in charge of a new eastern engineering office for the Electronics Division of **Clary Corporation** has been announced . . . **Aeronca Manufacturing Corporation,** Middletown, Ohio, has appointed **Henry M. Ross** to the position of chief of development engineering . . . **K. E. Hapgood** has been promoted to the post of director of the **Tennessee Valley Authority's** Division of Power Engineering and Construction with headquarters in Chattanooga, Tenn. . . . At a recent meeting of the board of directors of the **Kollmorgen Optical Corporation,** Northampton, Mass., **Richard Rachals** was named vice president in charge of engineering . . . The appointment of **Dr. George H. Brown** as chief engineer, Industrial Electronic Products, **Radio Corporation of America,** has been announced . . . **Carl E. Sutherland, Jr.,** has been named vice president in charge of production and engineering for the **Skidmore-Wilhelm Manufacturing Company,** Cleveland, Ohio, according to an announcement by **Jack Wilhelm,** president . . . **George V. Mueller** has been appointed development engineer on the motor design and development staff of **Robbins & Myers, Inc.,** Springfield, Ohio . . . **George M. Russell** has joined **Packard-Bell Electronics** as liaison engineer attached to the Washington, D. C., office, it has been announced by **Richard B. Leng,** vice president in charge of the Technical Products Division.

Mr. Hapgood

Dr. Max J. Gleissner has been appointed to the position of chief engineer and assistant manager for **Falcon Air Maps Co.,** Denver, Colo. . . . **J. Philip Wettach** has been named lubrication engineer for the Engineering and Construction Division of **Dravo Corporation,** Pittsburgh, Pa. . . . **H. M. Webber** has been appointed manager of process engineering for **Harper Electric Furnace Corporation,** Buffalo, N. Y., it has been announced by **Roderick L. Harper,** executive vice president . . . The appointment of **Lt. Col. Wesley D. Alcorn** as district engineer at Chicago, serving Illinois, has been announced by **J. E. Buchanan,** president of **The Asphalt Institute** . . . **William C. Bullock** has joined the engineering staff of **G-L Electronics,** Camden, N. J. . . . **L. H. Oppenheim, Kaiser Engineers'** vice president and assistant general manager, has announced the appointment of **A. L. Lindsay, Jr.,** of the company's Nuclear Engineering Division as manager, Nuclear Engineering Development, Tokyo, Japan . . . **Sampson T. Noall** has been named laboratory manager in the engineering department of the **Formsprag Company,** Warren, Mich. . . . **George R. Gray** has joined **Drilling Fluids Corporation,** Houston, Tex., as vice president in charge of research and engineering . . . **Hans Bohuslav,** general manager of the Miehle-Dexter Supercharger Division of **Miehle-Goss-Dexter, Inc.,** Racine, Wis., announces the appointment of **Dr. Klaus C. Karde** to a newly-established position as director of engineering, research and development . . . **John A. Kriva** has been named manager-manufacturing engineering for the Industrial Division of the **Warner Electric Brake & Clutch Company,** Beloit, Wis. . . . **P. R. Perino** has joined the staff of the **Allegany Instrument Company,** Cumberland, Md., as project engineer.

Mr. Webber

New Field . . . **Lee F. Bernhardt,** chief engineer of "Design" located in Fort Wayne, Ind., announces the entrance of that firm into the specialized field of automation.

New Offices . . . The **Weston Electrical Instrument Corporation,** Newark, N. J., a subsidiary of **Daystrom, Inc.,** has opened a district sales office in Detroit to serve southeastern Michigan. **Weston** had been represented in that area for the past eighteen years by the **T. S. Cawthorne Company. Temp Cawthorne, Gordon Walker, Ed Duda, George Sutinen, Lee Clark,** and **Kay Garside,** formerly of the **Cawthorne Company,** are now all members of the new **Weston** staff with **Mr. Cawthorne** as manager . . . **Simmerson and Bell, Engineers, and K. C. Mock and Associates, Engineers and Surveyors,** have opened offices at Palm Beach, Fla.—and not in California as previously reported in the September AE . . . The establishment of a sales organization to handle sales of its equipment and supplies in Mexico has been announced by **American Photocopy Equipment Company,** Chicago, Ill. Home offices will be in Mexico City.

Meeting

(*Continued from page 13*)

kind of enthusiasm which we must have for a "whooping" advance in membership of NSPE.

Board Action: Report Accepted

STATE AND CHAPTER ACTIVITIES

The Indoctrination Kit for new officers, which has been prepared by the State and Chapter Activities Committee, will soon be ready for distribution. A standard letter of transmittal will accompany this kit, which will be mailed to new presidents and secretaries of all local chapters and state societies. This publication is intended to supplement the Chapter Handbook and will contain a summary of available NSPE literature. Each year this information will be passed on to the new officers.

The following items are being considered by the Committee at the present time:

1. Review our present Chapter Monographs from the standpoint of improvement and modernization.

2. Study the need for and write additional monographs.

3. Review the "Chapter Handbook" which was prepared and distributed in 1950. This is an important tool in the hands of our chapters and should be revised and its use stimulated.

4. Study ways and means to promote ladies' auxiliaries. There have been definite indications that well organized ladies' auxiliaries have stimulated the growth of chapters and have played a part in increasing attendance at meetings.

This Committee desires to develop and promote "better use" of the ideas and valuable information which has already been produced and made available for the Society.

Board Action: Report Accepted

STUDENT CHAPTER SUBCOMMITTEE

This Subcommittee has been working since the last meeting on the assignment given it in October of last year. There are many aspects to the problem of NSPE sponsoring student chapters. The commitments on the part of our Society in this undertaking can be significant. This Subcommittee believes that this step is most important. Therefore, it has proceeded cautiously in the development of its plans, even though it realizes the need for haste.

RECOMMENDATIONS

This Subcommittee was delegated to draft and submit to the Board:

a. Minimum requirements for student chapters.
b. Student chapter manual outline.
c. Student member requirements, privileges and dues.
d. Student chapter leaflet outline.

Before these assignments could be carried out it was necessary to visualize and determine the type of program NSPE would support for student chapters. In other words, what would be the NSPE philosophy toward student chapters? It was not possible to include with this report outlines for a manual or a leaflet until the principles recommended herein had been determined and approved.

It is recommended that:

1. The "Program for NSPE Student Chapters" be adopted in principle.

2. The objective of this program be the professional development and orientation of the student engineer.

3. The NSPE president designate a committee responsible for carrying out the program.

4. The "Standard for NSPE Student Chapters" be approved.

5. The student chapter member shall be a student registered in an accredited college of engineering leading to a degree in engineering.

6. The NSPE dues shall be set at $1.50 per year.

7. The "Procedure for Establishing a NSPE Student Chapter" be approved.

8. A student chapter subcommittee of NSPE be authorized to develop a "Program of Support by NSPE" but subject to securing budgetary approval for costs and text approval for publications.

Board Action: Recommendations Approved

YOUNG ENGINEERS

This report of the Young Engineers Committee covers the following subjects:

1. Consideration of a proposal by Armco Drainage & Metal Products, Inc., for NSPE to administer a number of scholarships for engineering students.

2. Information is submitted indicating the very low membership of EIT's in the Society and a proposal is made for a special membership drive for EIT's sponsored jointly by the Membership Committee and the Young Engineers Committee.

3. A new recommendation is made that state societies and local chapters be encouraged to organize functional groups of EIT's where this kind of group organization appears desirable.

Armco Drainage & Metal Products, Inc. has made a proposal to the National Society of Professional Engineers in which they propose to set up a $15,000 a year civil engineering scholarship program to be administered by NSPE. T. A. Harrison, director, College Programs Section of Armco, has corresponded with the chairman of the Young Engineers Committee. Preliminary discussions have taken place with the officers of NSPE and the Executive Committee. A meeting was held in Kansas City and was attended by: Mr. Harrison of Armco; Dr. Clark Dunn, vice president of NSPE; and Professor Leland Holson, chairman of the Young Engineers Committee, regarding the details of the proposal.

Know Your Society! Read These National Committee Reports.

NSPE, with its state and local organizations and with its broad professional interests, is in excellent position to administer the scholarship plan as submitted by Armco, and similar plans. There appears to be no other engineering group whose organization would lend itself so easily to such an undertaking. There would, of course, be certain administrative costs for the Society to bear; but, the Society would be rendering a real service to engineering students, and to the engineering profession of the future. It does appear, however, that our Society would find it undesirable to administer this one scholarship plan and stop there. Executive Director Paul Robbins, who has had considerable experience with the administration of engineering scholarships, feels that if we are to undertake this Armco plan, we should invite other groups to make scholarship grants with the hope that a number of companies would cooperate in similar proposals. Members of the Young Engineers Committee are of the same thinking. Another group, the International Association of Blue Print and Allied Industries, has approached NSPE regarding their interest in establishing a scholarship through NSPE. If a number of groups would make such scholarship grants, NSPE would render a great service to engineering education.

The Young Engineers Committee, after careful consideration, recommends approval of the following:

1. The Board of Directors approve the policy of NSPE entering into agreement with associations, corporations, foundations, or individuals desiring to make scholarship and fellowship grants in the engineering field, these grants to be administered by NSPE.

2. The Armco Plan dated August 30, 1957, be approved with the provision that such changes be made as appear desirable by Armco and the NSPE administrative group.

3. The president of NSPE be authorized to appoint a committee known as the engineering scholarship committee which will be charged with the responsibility of administering the Armco Scholarship Plan and other scholarship plans received by the Society. This committee also may solicit and negotiate scholarship and fellowship grants for engineering students from other industries, associations, corporations, foundations, and persons.

It is noted that the special committee which is recommended for this work will cooperate closely with the Engineering Preparation Committee in connection with high schools and also with the Student Chapter Committee in the colleges and universities. This recommended scholarship committee will also carry on a great deal of its work through the local chapters and state societies. It is felt that the amount of work involved in organizing this undertaking and in the administration of a number of such plans would be a sizable administrative work load that should require the services of a separate committee.

Board Action: Recommendations Approved

Symposium

(*Continued from page 33*)

neering teaching today, more than ever before, a large amount of the time of faculty members must be devoted to the maintenance and improvement of laboratories.

Professional society activities should properly take an important place in the lives of engineering college teachers. In most areas of the country professors do, in fact, participate to an extent at least equal to and generally greater than that of their colleagues practicing in engineering. In addition to the engineering societies, college professors should be involved in the affairs of educational organizations. Other duties, such as the inspections and reports required in the accreditation of engineering colleges, are more frequently assigned to college professors than to practicing engineers. In these service activities our teachers should set an example for their students.

To progress in academic rank at most engineering schools today, it is necessary for the engineering teacher to be more than a teacher. In general he must be interested and productive in scholarly activities such as research and writing. For an engineering college to contribute to the profession to the best of its ability, it is necessary that it engage not only in the dissemination of knowledge but also in the creation of new knowledge. Research is therefore a definite function of the engineering college and consequently of the engineering college teacher.

At engineering schools offering graduate programs leading to the master's and doctorate degrees the staff load is considerably increased by these programs. Preparation for graduate courses takes more time than for undergraduate courses because of the amount of source material that must be investigated and because of the relative infrequency of the course offerings. In most cases, a large amount of individual instruction is necessary in graduate programs, particularly in the direction of a student's research project and the writing of his thesis.

There are other activities in which the teacher is expected to participate, such as in the preparation and grading of examinations for registration as engineers-in-training and as professional engineers, and talks to high school students on career days. Nearly every college professor finds he has an increasing amount of correspondence to handle. He is frequently called upon to help state, municipal and Federal agencies. . . .

LET us now look at what the engineering college has to offer to the young engineering teacher. In this connection, the results of an informal survey I have been conducting among our senior engineering students will be pertinent. I asked a number of classes of seniors to write on a card the three most important considerations in their choice of a job. More than a dozen different items were listed, but three were most frequently found. One of these was found on nearly every card submitted by the students in the survey. It was, "What does the job hold for the future—or where will I be ten years from now." The second most popular criterion was, "What kind of work will I be doing? It must be work in which I am interested." The third most popular consideration was the starting salary.

What does the future hold for the young engineering teacher? What about the ultimate earning power of the teacher today? Starting salaries for instructors average about $4,500 and the salary of the full professor about $13,000. There are no jobs paying that much money in most engineering schools today. This, then, is one of the primary factors preventing the young engineer from taking an interest in teaching. Not all of us can get to be president of a company, but if we are working for a company, we like to feel that we could attain that position. On the other hand, if the top position does not appear to be worthy of the effort and time required to achieve it, then there is no incentive. . . .

THE shortage of engineering teachers today is probably higher than the shortage of engineers in engineering jobs. The reasons are primarily that the teaching profession in engineering is not attractive to young men and that many of the experienced engineering teachers are leaving teaching for more lucrative jobs in industry. Of twelve men who have resigned from one engineering department at Georgia Tech in the last seven years, ten left to go into engineering practice, and two left for other jobs in teaching. This situation is repeated at other engineering schools all over the country.

What are the results of this shortage of engineering teachers? First, increased loads on existing staff members are inevitable because men who are leaving the profession cannot be replaced with men of equal ability. Although every effort is being made to maintain the high quality of teaching staffs by seeking the best men for vacant positions, there is bound to be some lowering of qualifications in order to obtain the number of people needed. This will result, of course, in lower quality graduates, thence poorer engineers for industry and the profession.

What are the remedies? The answers appear simple, but implementing the suggestions for solutions has proved to be ineffectual to date. First and perhaps most imporant of the remedies is more for engineering education. This is truly a situation in which money, or the lack of it, is the root of much evil. The most important source of funds, particularly for state-supported institutions, is from public tax support. The professional engineer must do all in his power to inform the public and elected or appointed public servants of the need for these funds. He should then take a more active and intensive interest in the operation of all engineering schools, but particularly those in his community and in his own alma mater. In many places engineering schools have not been able to convince legislators or trustees that engineering education is inherently much more expensive than liberal arts education. There are several reasons for this but the primary one is the need for ever-increasing and more expensive laboratory facilities. Another is the need for paying proportionately higher salaries to engineering and science teachers than for those in some other areas.

The engineering graduates of most schools have up to now contributed but little to the financial support of the schools in which they received their technical educations. Engineering college alumni today can afford to contribute five or ten times the amount they now provide for helping support their schools.

PERHAPS the most logical source of financial support is from industry. The word "industry" is used here in the broad sense to denote any company, firm or individual employing engineering graduates. The engineering graduate is a necessary and important part of the productive capacity of any industry. As such he has value, as indicated by the willingness of employers to pay the young graduate from $5,000 to $6,000 per year. If overhead is added to his salary at the usual rate of 100 per cent, this man will cost his employer $10,000 to $12,000 during the first year. During that first year he will be only partially productive. It appears that the employer could

(*Continued on page 48*)

Spotlight

(Continued from page 23)

the speaker on the challenging subject, "Engineering—A Profession or Trade?" During the second day's discussions the writer reviewed the work of NSPE in the industrial employment practices field and NSPE's Legislative Analyst, Milton F. Lunch, spoke on current developments in legislation and law affecting engineering employment problems. NSPE Vice President Harry G. Kennedy covered the organizational situation within the profession. Paul H. Robbins, executive director of NSPE, reviewed some of the highlights of the recent report on the motivation of engineers. Recruitment and criteria for professional employment was handled by Harold A. Bolz of Ohio State. After each session there was an open discussion period which proved highly interesting and informative.

The entire program was sponsored by the Ohio Society Functional Group on Engineers-in-Industry and the Dayton Chapter. Elmer S. Barrett, president of the Ohio Society, and George W. Brandt, president of the Dayton Chapter, spoke briefly and welcomed the audience. Arthur E. Heiberg, chairman of the OSPE Engineer-in-Industry Functional Group, explained the activities of that group, and NSPE Past President John D. Coleman of Ohio acted as "M.C." with his well-known brand of penetrating comment interspersed with appropriate humor. The consensus of those who had the opportunity to attend these sessions, certainly including the opinion of the NSPE Engineer-in-Industry Functional Group, hers was, "Well Done, OSPE!"

End.

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Symposium

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invest an additional $1,000, or about ten per cent more, to insure a continuing supply of adequately trained engineering graduates for his future use. In other words, this product of the engineering schools, which has obvious value, is now given to the employers absolutely free. Industry can well afford to support engineering education up to at least $1,000 per graduate per year. This would make a tremendous difference in the operation of our engineering schools and would assure the profession that the vine which is furnishing the fruit shall not be left to die.

Another remedy is one which would not cost money. There is a need in the United States for increasing the prestige of the engineering college teacher. In most cases, he is a man who deserves recognition on the basis of his ability, achievement and professional attitude. In most European and South American countries the college professor is highly respected. Too often in our country he is looked upon as an eccentric, who would probably not be successful in the competitive world of industry. There are some persons who feel it is fitting that college professors be paid less than they could earn in industry because this assures attracting to teaching only those who are dedicated to it. But there is no fundamental difference between the engineer in education and the engineer in practice, except that to qualify for a position in education the young engineer must have ability considerably above the average of his colleagues. ***End.***

What Does Education Offer to the Young Engineer?

by John C. Calhoun, Jr., P.E.

The Author . . .

Mr. Calhoun

John C. Calhoun, Jr., is dean of engineering at the A&M College of Texas, and also serves as director of the Engineering Experiment Station, and director of the Engineering Extension Service. Born in Betula, Pennsylvania, in 1917, he received his B.S. degree in petroleum engineering from Pennsylvania State University in 1937, and his M.S. and Ph.D. in 1941 and 1946 respectively. Dr. Calhoun was employed as a research assistant and instructor at Pennsylvania State University from 1937 to 1946, and as professor and head of the Department of Petroleum and Natural Gas Engineering from 1950 to 1955 when he assumed his present position. He was associate professor, professor, and chairman of the School of Petroleum Engineering at the University of Oklahoma from 1946 to 1950. The author of many articles, Mr. Calhoun also serves as a consultant to numerous private companies and state agencies. He is a member of AIME, ASEE, and ACS among others.

PERHAPS I should start with the word "motivation." Certainly, we cannot expect young engineers to adopt education as their area of contribution to engineering unless we offer incentives which will motivate them to so choose. It is difficult to find a financial motivation. Most starting salaries for teachers are less than starting salaries in industry for engineers with equal experience. However, contrary to popular belief, the annual income of the engineer in teaching is not far below his industrial counterpart. At least, this is so if we can believe the recent survey of the Engineers Joint Council, which shows that engineers in education have annual incomes nearly equal to those of all engineers for the same number of years after graduation. But the EJC survey cannot show the relative amounts of effort put forth by the engineer in education and his counterpart in industry to earn these equivalent incomes. The college teacher brings his income up to that of his industrial counterpart by undertaking side jobs, by entering into special consulting practices, by overtime research arrangements and by other devices which place him under greater pressure and cause him to work many more hours per week than his industrial counterpart. Certainly, anyone who has observed both teachers and engineers in industry would not choose the teaching profession if the motivation was financial reward.

Nor can we say that the incentive to enter teaching is an opportunity for leading a leisurely life. Those familiar with today's campuses know that the engineering teacher is under greater pressure than his counterpart in industry, not only because of the demands of his campus duties, but because of the demands he voluntarily places upon himself in order to earn the income referred to above. At one time it might have been said that the young engineer could be attracted to teaching because of the cultural atmosphere of the campus, because of vacation incentives, because of job security, or because of other intangible advantages. These incentives have largely faded away because industry has taken great strides to provide the engineer with an environment that is equal to or better than that found on the campus. Fringe benefits, vacation allowances, and opportunities for study often equal or better those which a college can afford to offer to its staff.

What then does education offer to the young engineer? This question must be asked and satisfactorily answered. As an engineering educator, I cannot talk honestly to a young engineer about joining an educational institution unless I can point out to him the advantages that will accrue to him by making education his life work. It is difficult to give an unequivocal answer because there are few tangible advantages. The key to finding a good teacher is to find the man who accepts education as a challenge and a calling, the elements of which are largely intangible.

First, may I look at the tangible items. These are few, but among them we might list: (1) the discipline of being forced to think through fundamental ideas in order to place them into an organized pattern for transmission to other persons—in short, an improvement of one's powers of analysis, organizations, and communication; (2) the opportunity to work at close hand with experts; (3) the wide range of contacts which the young engineer can acquire, and (4) the opportunity for rapid advancement.

The primary thing which education offers to the young engineer is a challenge. Education offer the opportunity to participate in one of the frontiers of civilization. It offers the young engineer the privilege to assist in the development of an activity which is at the very heart of the progress of man. The engineer has come into his own as a participant in the far-flung affairs of man and if he would continue as an active participant in those affairs which lie at the very nucleus of our growth, both cultural and material, he would not neglect education. I believe this viewpoint is well substantiated by the titles and subject matter of articles, books, and news items that are appearing today. . . .

There is much written and spoken concerning the needs for engineers, but we should not conclude that the shortages are limited to engineering and science. There appear to be shortages of managers, operators, designers, and interpreters, as well as of scientists, engineers, and teachers. The cry for more brain power comes from all sides. There are shortages in medicine, in agriculture,

and in the armed forces, as well as in industry. The cry is not limited to a particular industry, to any one scholarly discipline or to any one function of man.

An understanding of these composite shortages and recognition of the fact that they are all part of one phenomenon is necessary for appreciating the challenge that exists for education. Regardless of how we may break down our ideas as to local needs, it should follow that whatever is done be done from the point of view of its effect on the total demand for trained manpower, which in turn must be considered in terms of the total relationships between man and his environment—the effects of the environment upon man, and the effects of man upon his environment. . . .

It seems to me that we have reached a period wherein the demand for trained minds is so vital that conservation is forced upon us. This means that we must examine the process of education, for education is the means by which we develop the latent human resource and bring the mind of man to the point where it can be used to the best advantage. We must also examine our raw material and end user, that is whether the individual is properly prepared to start at a given point in the education process and whether his education is put to best use.

Of course, we have been in the transition stages of arriving at this viewpoint on education and we already recognize a number of the problems with which we must deal. Among the problems I believe to be important are: (1) the rapidly expanding total volume of knowledge; (2) the shortened time intervals between ideas and application, and (3) the necessity for overlapping disciplines.

First, consider the rapidly expanding body of knowledge. This is partly the result of the fact that man has made progress in learning. The longer man lives, the more total information he uncovers and accumulates. However, today there are also more persons concerned with uncovering knowledge, recording it, and disseminating it than in the past. This fact alone would increase the total body of knowledge exponentially. In addition, we have learned, as a part of our total knowledge, how to uncover new knowledge more efficiently. In any event, none would argue that the literature which crosses his desk, especially current magazines, is greater than he can assimilate. One of the problems, therefore, is that of condensing the total body of knowledge to higher densities or to generalized concepts, so that it can be more readily handled and digested.

Second, consider the shortening time between appearance of a basic idea and its applications. The elapsed period between the birth of an idea today and its application to economic gain is shorter than in the past and is becoming shorter. For one reason we do not leave the development of ideas to chance. Indeed, we work on them wholeheartedly. We have research organizations whose sole objective is to translate basic ideas into useful products. The development of an idea for practical use is at the heart of our free enterprise system.

Third, consider the necessity for overlapping disciplines. This is also partly a result of our competitive economy, and partly a result of the increased total amount of knowledge. The man who meets an obstacle in one area of study may find his answer in some other area of study. For this reason research tends to use the team effort rather than the individual approach. It becomes advantageous to work together to find the best solution in the shortest period of time. This is not only necessary in the industrial world; it is also necessary in the scholastic world.

Engineering is very close to the idea of conserving nature's resources for man's total good, and when the resource becomes man himself, engineering and education have come together. Engineering has, in fact, developed as a conservation problem. When man first began to harness nature and to construct artifacts for his utilization and enjoyment, the only energy he could command was his own. Slavery was the rule, because the demand was for manpower, for bodies to do the work. Engineering during this stage consisted of dealing with structures that man could build by his own energy with the tools of his hands—such things as roads, dams, irrigation systems, ships and the like.

The industrial revolution gave man the power to convert energy to work by machines and, as a consequence, man had the use of energy to supplant his muscles. The cry that developed was then one for machines. This cry had continued and is not yet satiated. We know of it today in our demands for continued mechanization of farms, homes and in such routine things as a greater number of horsepower beneath our command as we drive down the highway in our automobiles.

Now we are passing from the stage where demand for machine power gives way to demand for brain power, because it has become apparent that man will use artifacts to substitute for more than his own brute strength. We use complex electronic circuits to guide missiles, we have developed computers for arriving at answers much more rapidly than we can with our minds and for sorting and organizing information. Arrangements of one group of circuits, processes, or machines will automate other circuits, processes, or machines. All activities involve competition for brain power as well as for machine power and manpower. It is this sudden awakening of the realization of our brain power potential that has created the shortages which we now face in engineering and technology.

It is definitely true that the development of our society in this direction is not the work of the scientist or the engineer. It is the work of society itself, demanding the fruits of its labor.

Of course, the engineer is a member of society. In the past, however, there have been relatively small numbers of engineers, and the individual engineer has been able to perform all levels of the engineering function—that of conceiving the change, that of putting it into operation, and that of interpreting its effect to society. The complexity of our present situation and its projected future is such that these functions must be split among groups of engineers. We must train some engineers to conceive the changes, others to put them into operation, and still others to interpret the effects to society.

The education of all citizens, especially in the humanities area, should include a basic understanding and knowledge of industry and of its use of technology. It should include an anaysis of the role of technology in the development of our past civilization. It should include a knowledge of the role of the engineer in society, and an understanding of how future technological advances can assist man in better making use of his human resources. Again, I am forced to the conclusion that engineering and education have been brought together in a common problem.

This, then, is what I see that education has to offer to the young engineer. It offers a calling to the challenge of education as a problem in conservation, the same sort of problem engineers have dealt with since their beginnings. It offers an opportunity to deal with society on a broad basis in terms of interpreting the meaning of engineering to society. I can think of no better way for an engineer to use his professional training.—*End.*

What's New

This column describes new products of general interest to professional engineers. For further information, circle the item number on opposite page and mail to the AMERICAN ENGINEER.

These listings are informational and are not an endorsement of the products, nor of the manufacturer's claims.

MEASURING BLADE — Item 30

The C-Thru Foreman, a 10-foot measuring blade, is now being marketed. Designed as a layout tool for home office, school and factory, it can be used for marking, scribing, figuring, squaring out rooms, making circles and many other purposes. The ¾" blade is self-locking and will not retract while in use.

PLASTIC LUBRICANT — Item 31

A new type of lubricant which possesses qualities of a true plastic and so achieves long-term lubrication has been developed for use in business machines by the Research Center of Gulf Oil Corporation. The new product is thixotropic, which means that while being worked it becomes thin and oily and, when working stops, it returns to the consistency of a light grease. Hence it does not run off, or wear off, the parts it protects. The new plastic petroleum can substantially extend the life of business machines, the manufacturer claims.

PLASTIC PANEL — Item 32

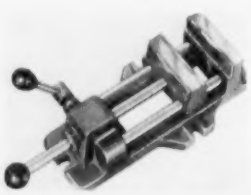
New lightweight structural plastic panel outlasts metal three to one in corrosive chemical fumes, according to maker, Resolite Corporation. Called Resolite "Metal Grey" panel, the Fiberglass-reinforced material is thoroughly opaque, as shown in photo, where a section of the new panel (top) is compared with standard translucent plastic panel (bottom).

LEVEE CONTROL — Item 33

Recently developed is the "Dynatrol" which utilizes new design principle for accurate and versatile high or low point detection or narrow range proportional control of liquid, solid and slurry levels. This small and rugged control has a positive acting electrical output control signal that varies with the amount of immersion of the 120 CPS vibrating paddle in the medium being detected. The output signal can be used to control the operation of any type of electrical equipment.

DRILL PRESS VISE — Item 34

A wide range drill press vise that safely handles both rigid and non-rigid work without distortion, has just been developed by L-W Chuck Co. A simple turn of the front adjusting screw bushing varies the jaw pressure from one to 1500 pounds. This precision-built device was especially designed to cut tooling costs and increase production.



ONE-TON LUGGER — Item 35

An agile three-wheel flat-top industrial truck that runs on batteries in narrow factory or warehouse aisles has been developed by Victor Adding Machine Co. Called the One-Ton Lugger, the versatile truck has a payload capacity of one ton and can make a 90-degree turn at an aisle intersesection as narrow as seven feet, it is reported.

PLASTIC FLASHING — Item 36

The Dow Chemical Company has developed an entirely new flashing material which, according to company spokesmen, is expected to find widespread application in the construction industry. Called Saraloy 400 elastic flashing, the product is being marketed after eight years of extensive use tests in a variety of flashing applications. A black, thermoplastic sheet of vinylidene chloride copolymer, Saraloy 400 flashings are said to be more effective against water penetration than any other available material.

CONCRETE SAW — Item 37

To meet the growing demands of contractors seeking a concrete saw small enough to be easily maneuverable, yet powerful enough to do heavy duty work, Champion Manufacturing Company now makes their smallest concrete saw, Model CS-500, available with self propulsion. It is designed for sawing contraction joints, trenching, and patching.

EARDRUM PROTECTOR — Item 38

A new type of pad to protect eardrums from the shock of extreme noises such as jet engine testing, drop forging, artillery fire, rock drilling, and interior sand blasting, has just been developed. Using cellular urethane foam pads, the headgear-type protectors safeguard against high and low frequency sound, yet permit the wearer to hear ordinary conversation. Unlike ordinary earplugs, the urethane foam pads cover the conductive skull bone around the ears.

COPYFLEX WHITEPRINTER — Item 39

The Charles Bruning Company, Inc., has developed the Copyflex 575, a new, high speed whiteprinter with wide printing latitude. The machine is equipped with a 5000 to 7500 watt selective switch controlled lamp, an adjustable lamp shield, a machine speed of 75 feet per minute, and a large 46" printing width.

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Look of the future on newest highways calls for new-type concrete. Shown, interchange in Los Angeles.

What's all this talk about

NEW-TYPE, SOUND-CONDITIONED CONCRETE FOR THE INTERSTATE SYSTEM?

It's timely talk—in a new, informative series of PCA magazine messages to create fuller appreciation by the public for the finer, smoother-riding concrete highways being built today.

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(Circle 9 on Reverse Cover)